

SINGER^{*}

SINGER FACTORY - MONZA

Service Manual

250

Series Machine Class

The Singer Company

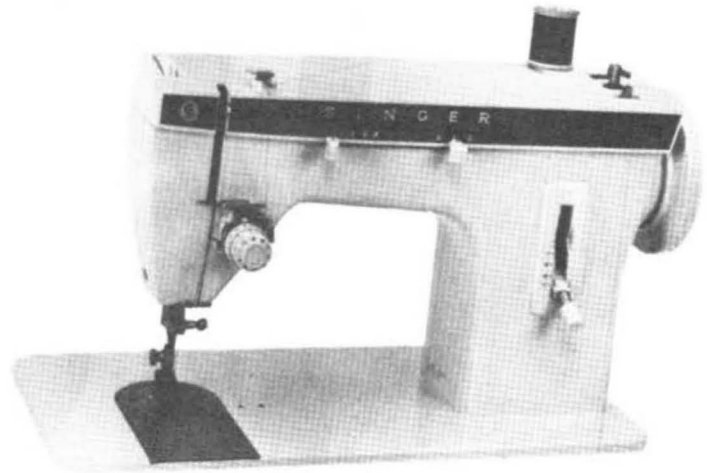
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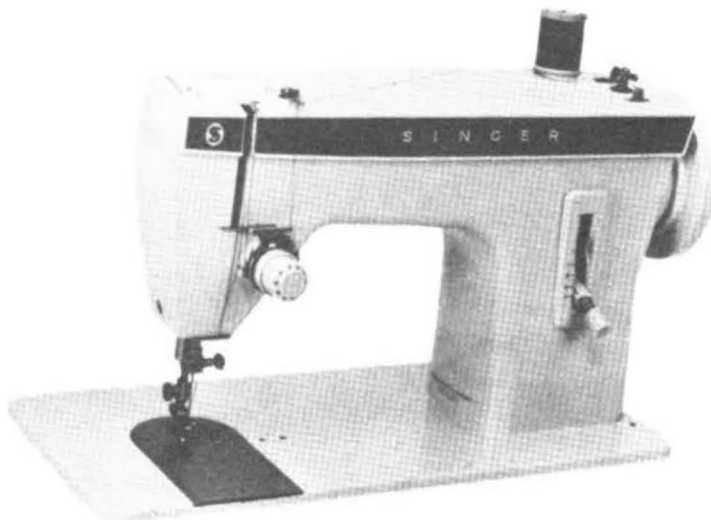
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Mod. 252



Mod. 257



Mod. 259

Specification of the 252 - 257 and 259 Class Machines

252	257	259
Automatic Zig-Zag Machine	Manual Zig-Zag Machine	Straight Stitch Machine

General Features

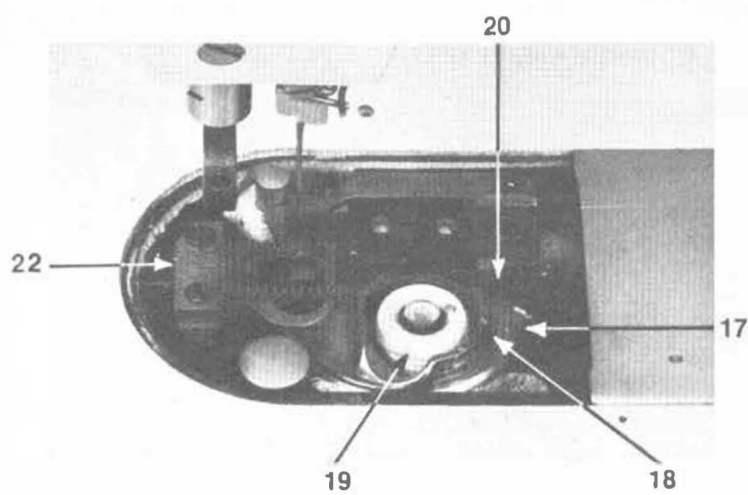
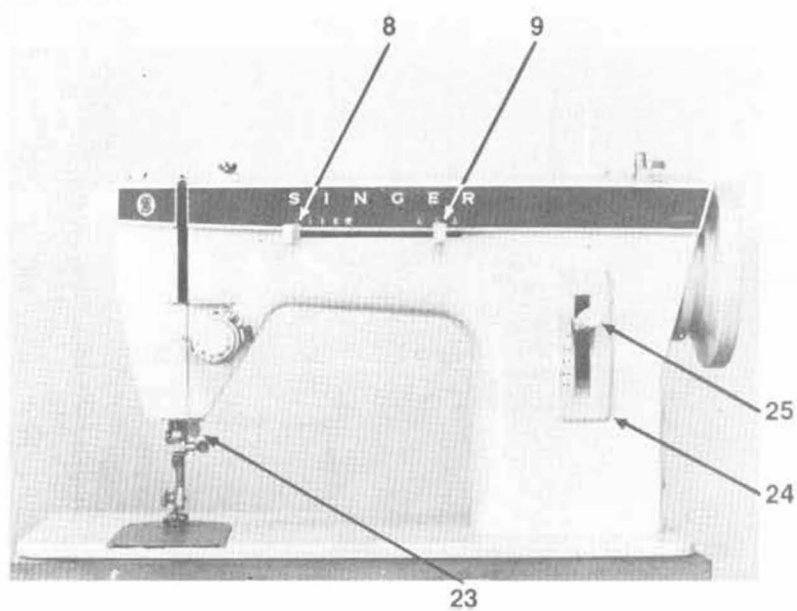
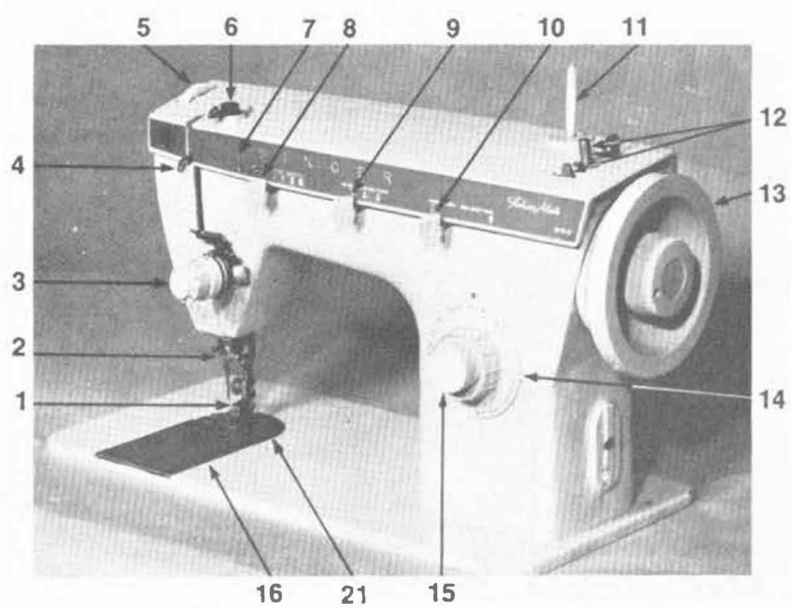
Flat bed machines with electric or treadle drive.
 Lock stitch machines.
 Maximum stitch length: 4 mm. (6 s.p.i.).
 Maximum stitch width: Approx. 5 mm. (3/16 inch); (252-257).
 Presser bar lift up to engagement: Approx. 7.5 mm. (295").
 Speed: Minimum 900 Stitches per minute.
 Needle, Catalog 2020 (15 x 1). Needle threading from front to back.
 Vertical axis rotating hook which makes two revolutions per stitch.
 Easy front « drop-in » bobbin.

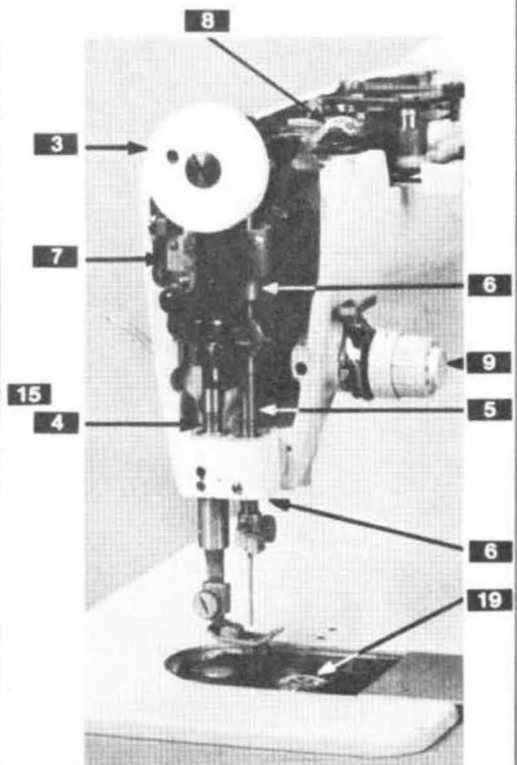
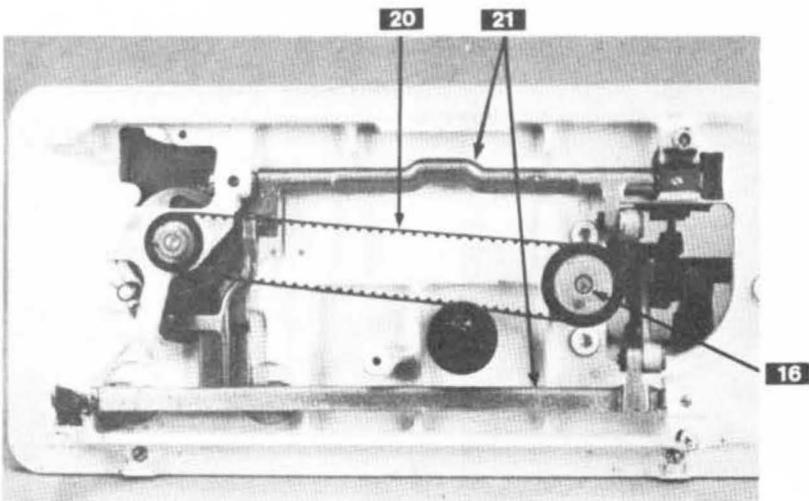
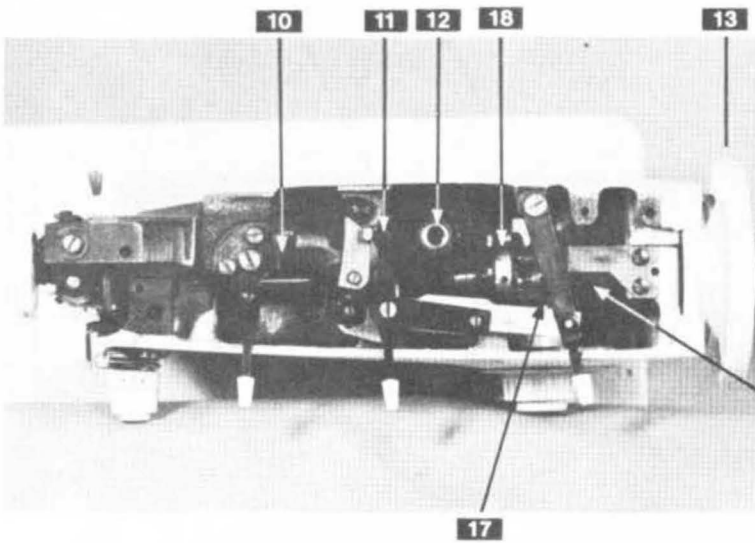
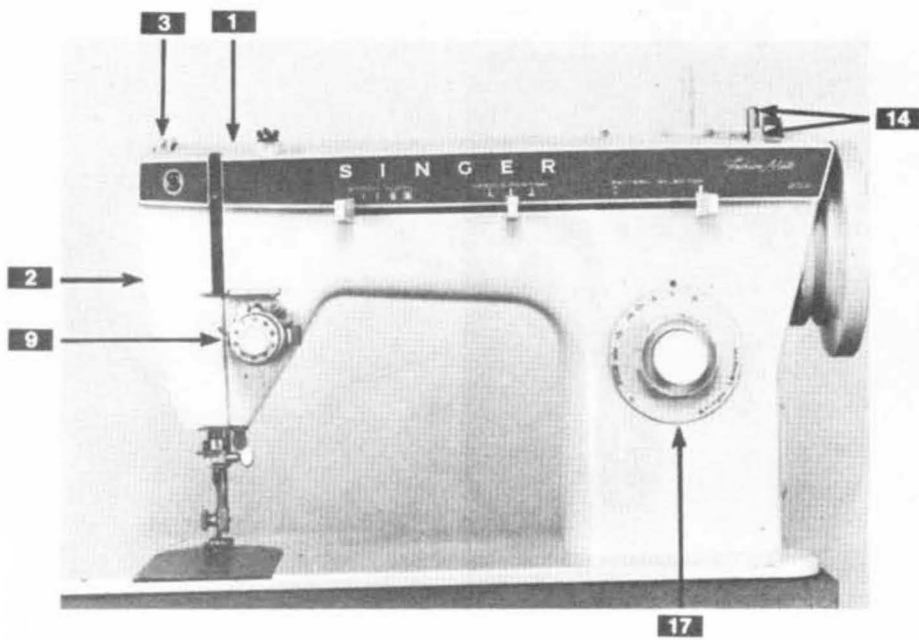
Comparison of the Particular Features

	252	257	259
Hidden bobbin winder	X	X	X
Front « drop-in » bobbin	X	X	X
Rotating hook	X	X	X

Description of Machines

	252	257	259
1. Snap-on, Snap-off Presser Foot	X	X	X
2. Needle Clamp	X	X	X
3. Thread Tension Regulator	X	X	X
4. Thread Take-up	X	X	X
5. Presser Bar Pressure Regulating Dial	X	X	X
6. Bobbin Winder Thread Guide	X	X	X
7. Control Panel	X	X	
8. Bight Lever	X	X	
9. Needle Position Lever	X	X	
10. Pattern Selector Lever	X		
11. Spool Pin	X	X	X
12. Bobbin Winder Lever and Spindle	X	X	X
13. Hand Wheel	X	X	X
14. Stitch Length Regulating Dial	X		
15. Reversing Button	X		
16. Bed Slide	X	X	X
17. Rotary Hook	X	X	X
18. Bobbin Case	X	X	X
19. Bobbin	X	X	X
20. Cushion Spring	X	X	X
21. Throat Plate	X	X	X
22. Feed Dog	X	X	X
23. Presser Bar Lifter Lever	X	X	X
24. Stitch indicator Plate		X	X
25. Stitch Length Regulator Lever		X	X





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Guides for Using Service Manual

To obtain the maximum benefit from this service manual, the following information should be studied carefully:

In order to keep this manual simple and easy to use, a single description has been used for all types of machines, however, where there are differences between the three types, this has been noted in the margins.

The NUMBERS (**1** , **2** , **3** etc.) used in this manual refer to specific assembly groups as indicated in the table of contents. A given number always refers to the same assembly group. For example, **1** always refers to arm top cover.

The LETTERS (**A** , **B** , **D** , etc.) used in this manual refer only to the parts indicated in the corresponding picture of a given assembly group. For example, the letter **A** does not refer to the same part in assembly group **1** as it does in assembly group **3** .

REFERENCES to the machine (left, right, front, rear, upward, etc.) are made with the machine being in its normal upright position with the control panel facing the operator.

Procedures for disassembling individual machine systems have been described in detail. In general, reassembly is done in the reverse order. Exceptions to this rule are explained whenever necessary.

The adjustments in each group should be done in the order they have been described without omitting any. Wherever it is necessary to check or set adjustments of other assembly groups, either before or after adjustment, this will be indicated.

Before disassembling a machine to find the causes for faulty operations, the machine should be thoroughly cleaned and lubricated. In doing so, make sure that no oil gets into the motor.

Before undertaking any work on electrical parts (motor, light) disconnect plug from the electrical outlet.

The handwheel must always be turned towards the front of the machine when it must be moved while performing adjustments.

The sets of gears are to be adjusted for smooth run and smallest amount of play and backlash.

Use only lubricants which are recommended by SINGER.

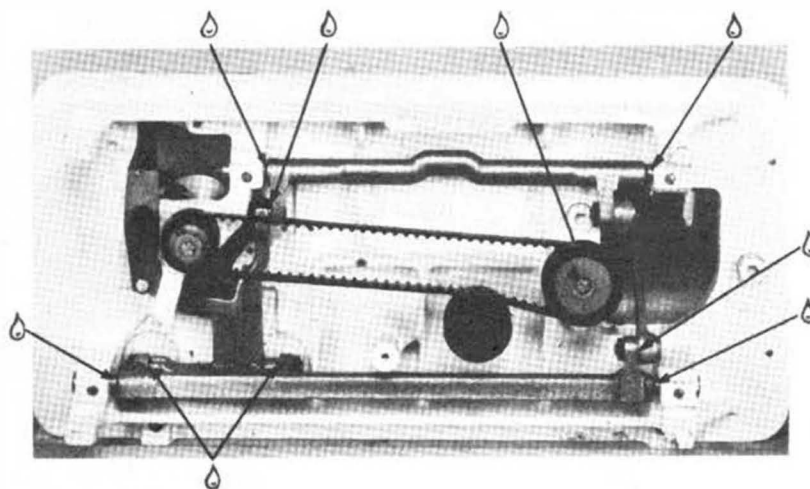
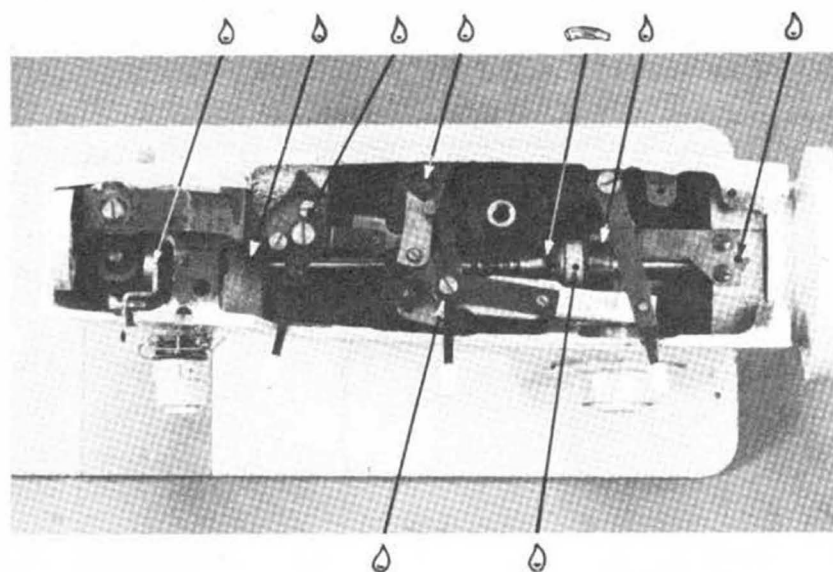
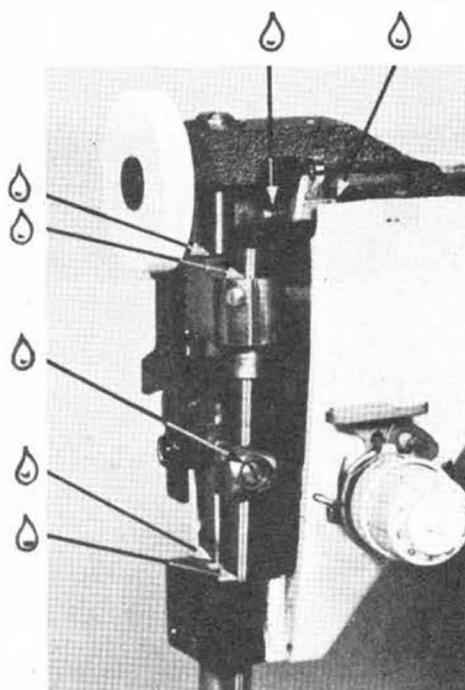
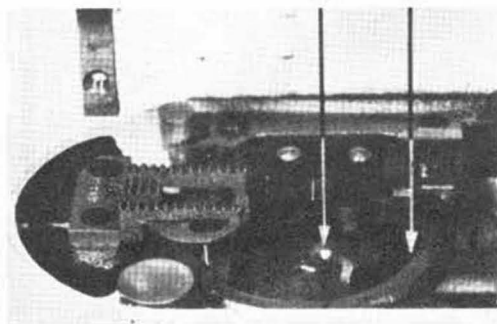
Never apply abrasives such as emery or lapping pastes to plastic gears.

Notes

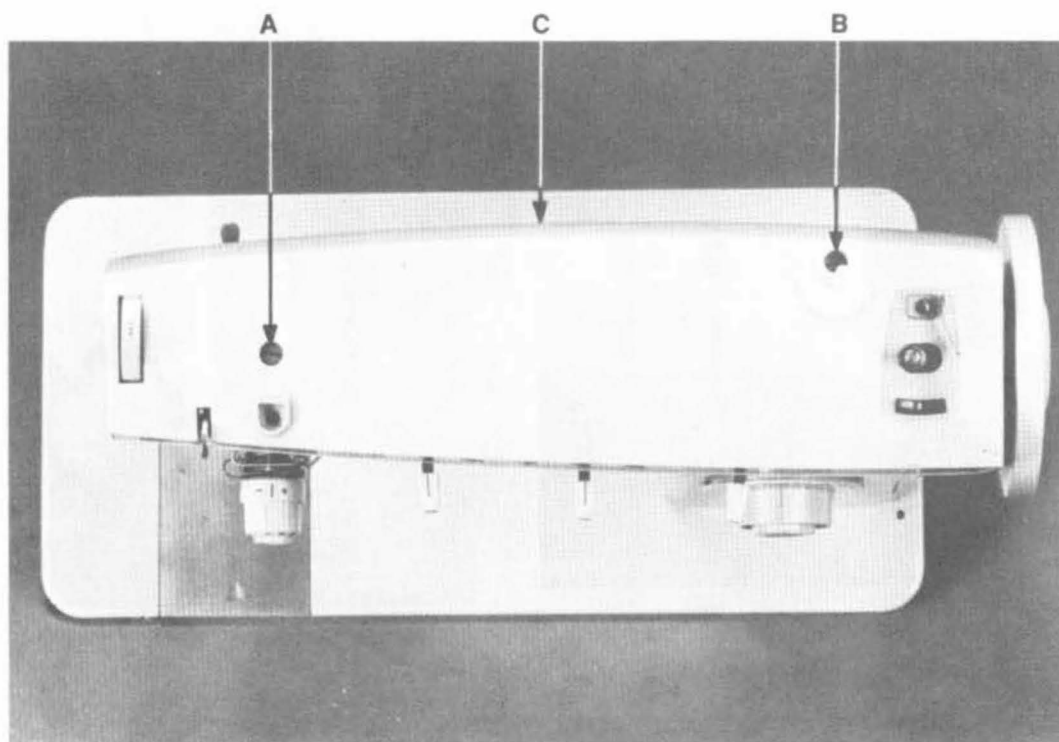
Lubrication

1. Disconnect the machine from electrical outlet.
2. Remove **1** , **2** , open the bed slide and remove throat plate.
3. Remove lint, dust and foreign particles found in the machine.
4. Apply oil to the points indicated.
5. Lay the machine on its back and oil the points indicated.
6. Remove excess oil.

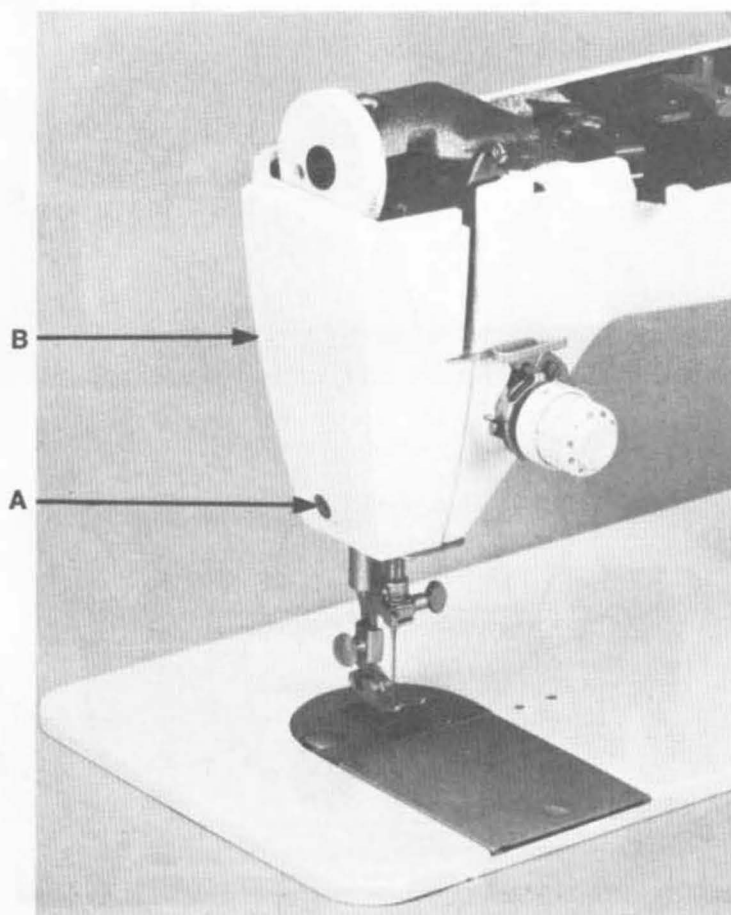
Note: a) The arrows in the illustration only show the most important lubricating points. Therefore, it may also become necessary to lubricate or oil any other moving parts in the machine.



1



2



1

Arm Top Cover

Removal:

- 1) Loosen screws **A** and **B**.
- 2) Lift off cover **C**.

2

Face Plate

Removal:

- 1) Remove screw **A**.
- 2) Remove face plate **B**.

3**Presser Foot Pressure Regulator**

Removal:

- 1) Remove **1** and **2**.
- 2) Lower presser foot.
- 3) Turn pressure regulating dial to "DARN" setting.
- 4) Remove screw **A**.
- 5) Remove dial **B**.
- 6) Remove screws **C**.
- 7) Remove pressure regulator assembly **D**.

Caution on reassembly:

- a) Make certain that the presser bar pressure pin is lodged in the cavity of presser bar **E**.
- b) Make certain that pressure extension pin **F** is seated against outside cam surface **G** on knob **B**.

Adjustment of presser foot pressure:

Note: Before adjusting presser foot pressure make certain that the presser foot is correctly adjusted in height as explained under **4**.

Check:

- 1) Turn hand wheel until the feed dog is in its lowest position.
- 2) Lower lever **J**.
- 3) Dial **B** should be set at "0" setting.
- 4) The pressure is correct when a piece of paper can be moved freely under the presser foot but with only a slight resistance.

Setting:

- 1) Loosen screw **H**.
- 2) Raise or lower the presser bar **E** to obtain the correct pressure, making certain that the pressure pin **F** is correctly on the cam surface **G**.
- 3) Tighten screw **H**.

4**Presser Bar Assembly**

Removal:

- 1) Remove **1**, **2** and **3**.
- 2) Remove screw **A** and presser foot **B**.
- 3) Lower lever **J** and loosen screws **C** and **D**.
- 4) Pull bushing **E** downwards, being careful with the thread cutter which is very sharp.
- 5) Lift guide **F** out of the slot and turn it to the right.
- 6) Remove pressure pin **G**, guide **F**, presser bar **H**, bushing **E** and pressure spring.

Note: Should it be necessary to remove lifter lever **J** or tension releasing lever **K** then proceed as described above.

Caution on reassembly:

- a) Make certain that the thread cutter on the bushing **E** faces to the rear of the machine.
- b) When bushing **E** is assembled, the top surface of the bushing should be aligned with the inner surface of the arm.

Adjustments - Presser foot height**Check:**

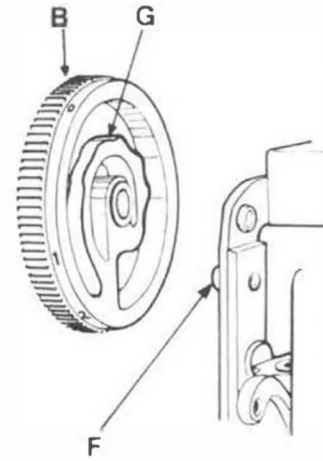
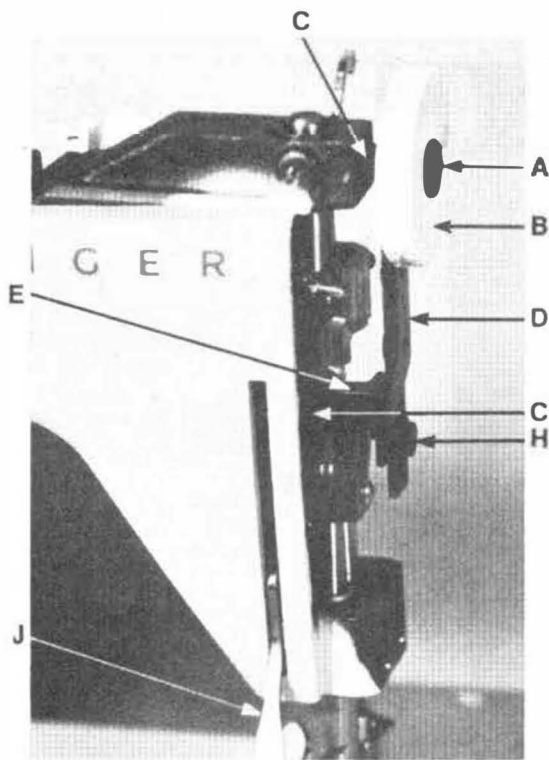
- 1) Lift lever **J** and turn hand wheel until feed dog is in its lowest position.
- 2) The distance between the inferior surface of presser foot **B** and top surface of throat plate should be between 7.35 and 7.60 (.290-.300).
- 3) Lower lever **J** and verify that presser foot is aligned with the slots in the throat plate as in sketch **L**.

Setting:

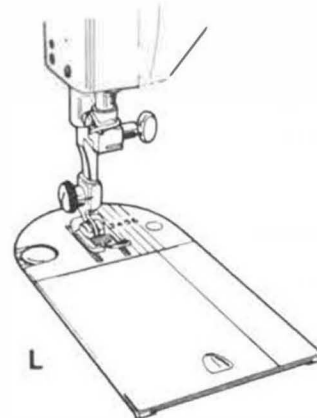
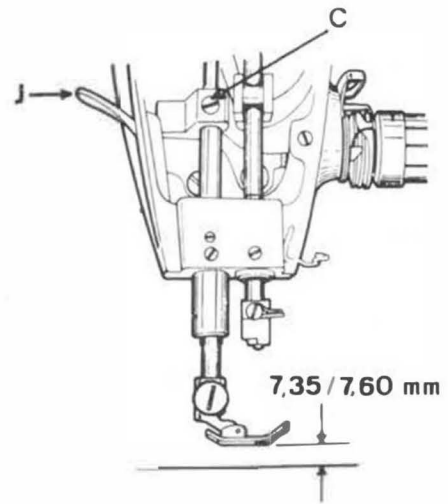
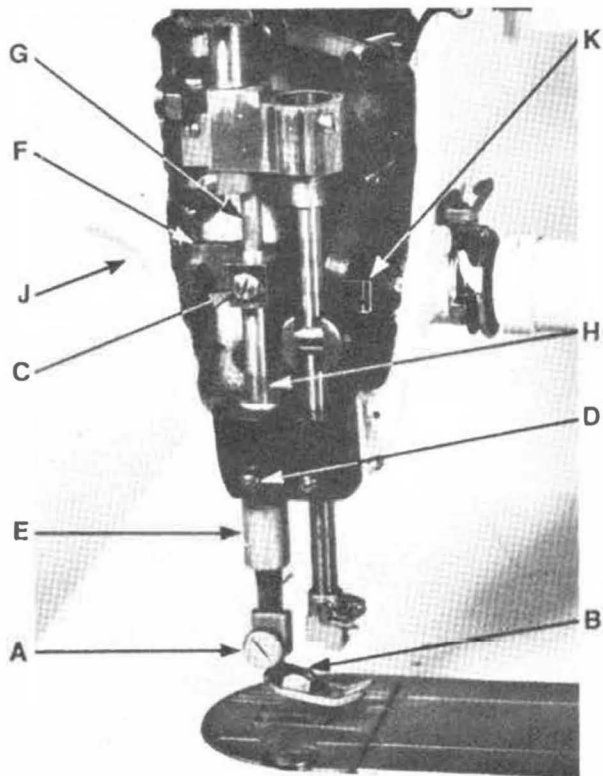
- 1) Lower lever **J** and loosen screw **C**, raise or lower presser bar **H** as required to obtain correct height. Assure sideways alignment as indicated by **L**.
- 2) Fasten screw **C**.

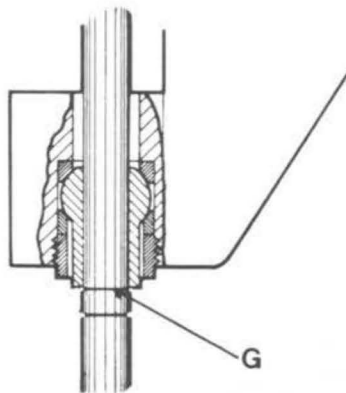
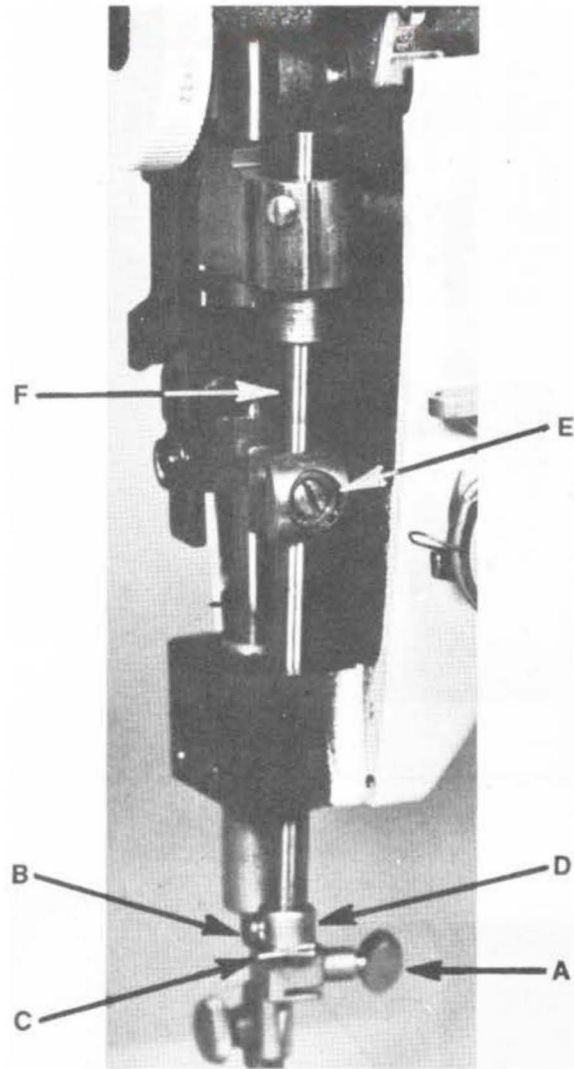
Note: After adjusting, check for correct pressure according to **3**.

3



4





Needle Bar

Removal:

- 1) Remove **1** and **2**.
- 2) Loosen needle thumb screw **A**.
- 3) Remove needle.
- 4) Remove needle stop screw **B** together with thread guide **C**.
- 5) Remove needle clamp body **D** downward.
- 6) Remove needle bar gib.
- 7) Loosen screw **E**.
- 8) Remove needle bar **F** upward out of machine.

Adjustments of needle bar height:

Check:

- 1) Turn hand wheel until needle bar **F** is at its lowest point.
- 2) At this point, upper timing mark **G** should be aligned with lower end of needle bar ball bushing.

Setting:

- 1) Loosen screw **E**, raise or lower needle bar **F** as required.
- 2) Align needle clamp body **D** parallel to front edge of throat plate.
- 3) Tighten screw **E**.

Note: Setting of needle bar in relation to throat plate is done in **7**, **10** and **11**.

6

Needle Bar Bearings

Removal of upper needle bar bearing:

- 1) Remove **1** and **2**.
- 2) Loosen screw **A**.
- 3) Push the ball bushing **B** upwards and remove retaining collar **C**, bearing bushing **D** and ball bushing **B**.

Note: Lubricate parts **B** and **C** prior to re-assembly.

Removal of lower needle bar bearing:

- 1) Remove **1** and **2**.
- 2) Remove needle clamp body as described in **5**. It is not necessary to remove needle bar.
- 3) Loosen screw **E**.
- 4) Remove adjusting screw **F**.
- 5) Remove ball bushing **G** and bearing bushing **H** downward.

Note: Lubricate parts **G** and **H** prior to re-assembly.

Adjustments:

Upper Needle Bar Bearing:

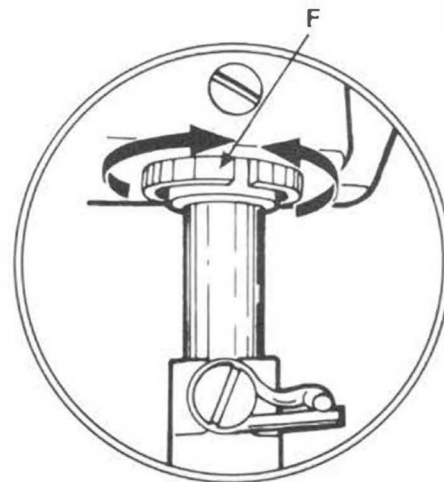
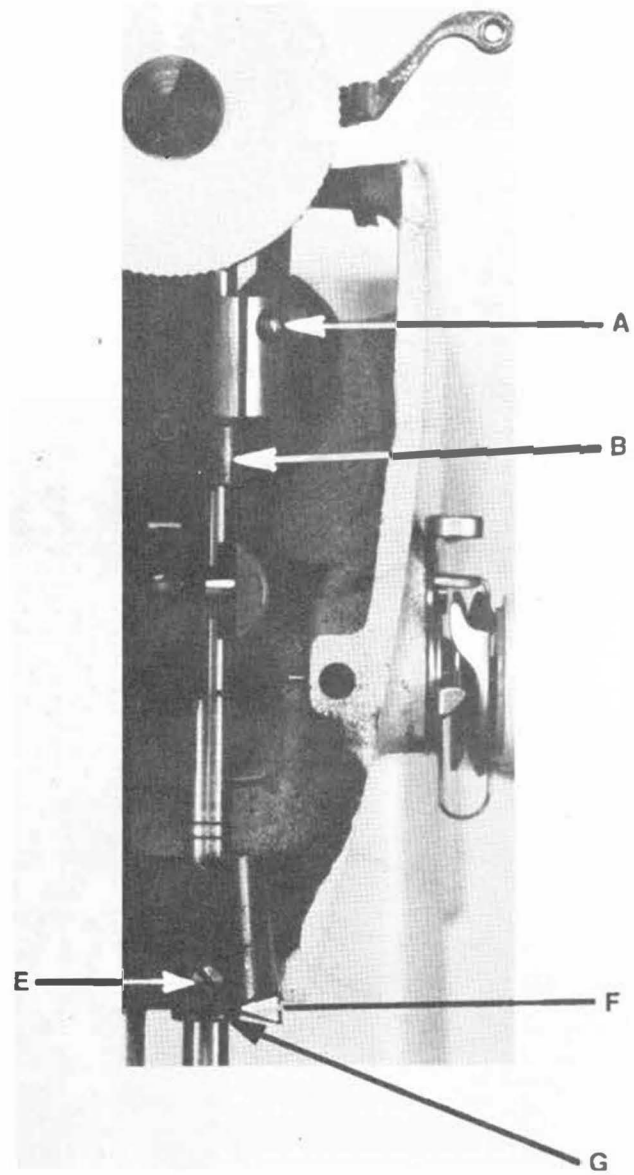
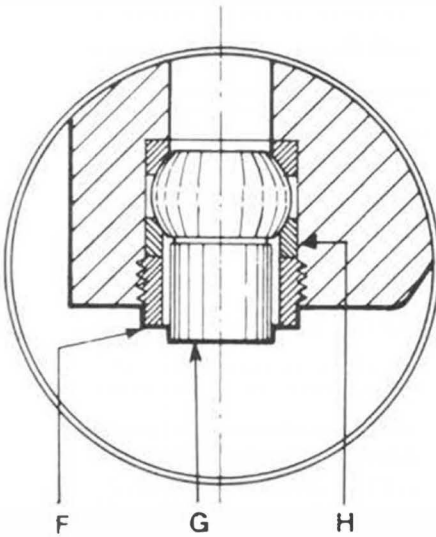
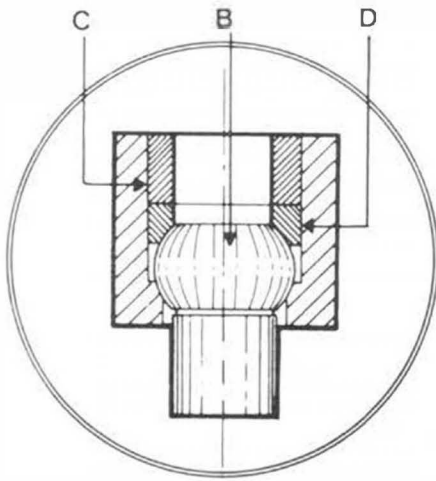
- 1) Loosen screw **A**.
- 2) Turn hand wheel until needle bar is in its lowest position.
- 3) Press the retaining collar **C** downward so that needle bar ball bushing **B** moves freely and without play.
- 4) Tighten screw **A**.

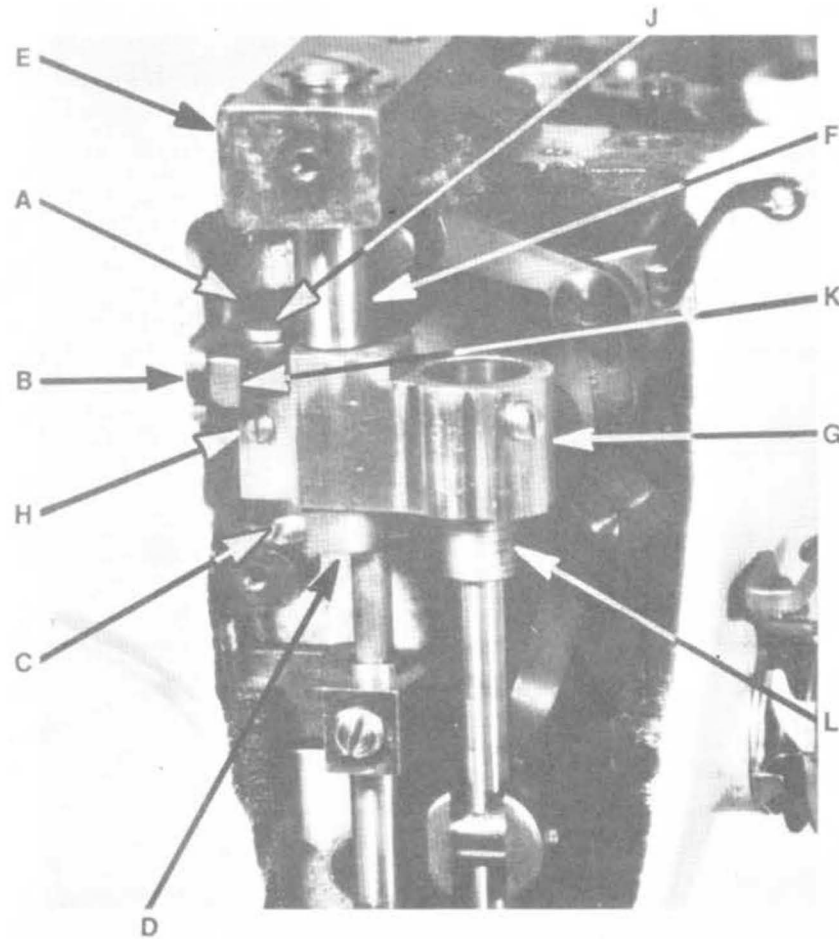
Lower Needle Bar Bearing:

- 1) Loosen screw **E**.
- 2) Turn hand wheel until needle bar is in its lowest position.
- 3) Turn adjusting screw **F** as required until the needle bar ball bushing **G** moves freely and without play.
- 4) Tighten screw **E**.

Caution:

Tightening of screw **E** may cause lower needle bar bearing to bind. In such a case, the adjusting screw **F** has to be readjusted.





Needle Bar Vibrating Bracket

Removal:

- 1) Remove **1**, **2** and **3**.
- 2) Unhook spring **A** and remove same.
- 3) Loosen screw **B**.
- 4) Loosen screw **C**.
- 5) Remove collar **D** downwards.
- 6) Loosen screw **E**.
- 7) Remove eccentric hinge pin **F** upwards.
- 8) Remove needle bar vibrating bracket **G**.

If it is necessary to disassemble the unit:

- 1) Loosen screw **H**.
- 2) Pull out hinge pin **J** and hinge bracket **K**.

Caution on reassembly:

- a) When re-inserting eccentric hinge pin **F**, make certain that the eccentric part (the end with the smallest diameter) is towards the left.
- b) Re-locate collar **D** so that vibrating bracket **G** moves freely and without vertical play.
- c) The extension finger on collar **D** should not touch ball bushing when needle penetrates to the left in the throat plate.
- d) Spring **A** should be assembled with the longest tail to the left.

Adjustment of front to back setting of needle bar:

- 1) Remove presser foot.
- 2) Place a size 14 needle No. 2020 (15 x 1) in the needle clamp.

Check:

- 1) Install a straight stitch throat plate.
- 2) Loosen screw **B**.
- 3) Position the needle bar vibrating bracket **G** so that the needle will enter needle hole.
- 4) Turn hand wheel until the needle is lowered into the throat plate needle hole up to the needle eye.
- 5) In this position, the needle should be centered in the needle hole relative to the front or rear.

Setting:

- 1) Loosen the screws **C** and **E**.
- 2) Rotate eccentric hinge pin to left or right as required until needle is centered in the hole.
- 3) Tighten screw **E** and **C**.

Note: After this adjustment, check the adjustments of stitch width lever stops and sideways setting of needle bar as described under **10**, sideways setting of needle bar as described under **11** and adjustments given under **19**. Check distance between needle and hook point. Readjust if necessary.

Adjustment of stops for sideways movement of needle bar

Note: Before doing this adjustment, check the adjustment of stitch width lever stops and sideways setting of needle bar as in **10** and sideways setting of needle bar as in **11**.

Check:

- 1) Install general purpose throat plate.
- 2) Set stitch width lever on "Straight Stitch".
- 3) Set needle position lever to "Right Needle".
- 4) The distance between the extension finger on collar **D** and the extension of ball bushing **L** should be equal 2 thickness of normal writing paper.

Setting:

- 1) Loosen screw **C**.
- 2) Position collar **D** to obtain distance described above.
- 3) Tighten screw **C**.

Needle Thread Take-Up and Needle Bar Connecting Link

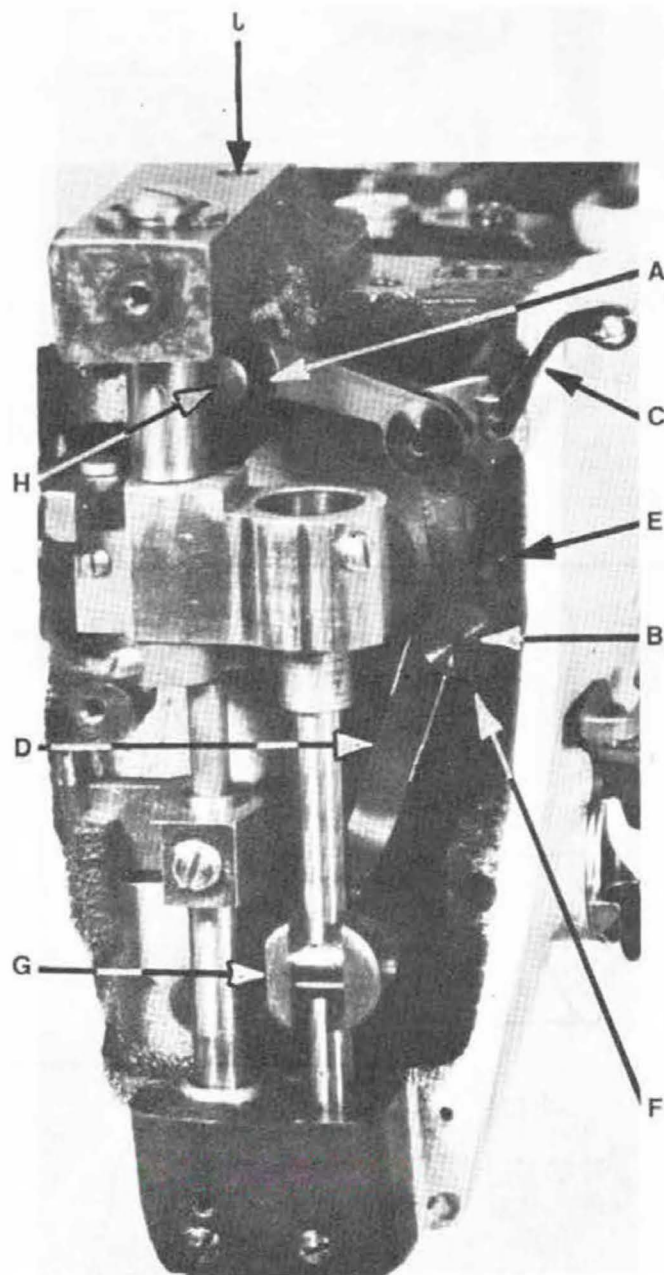
Removal:

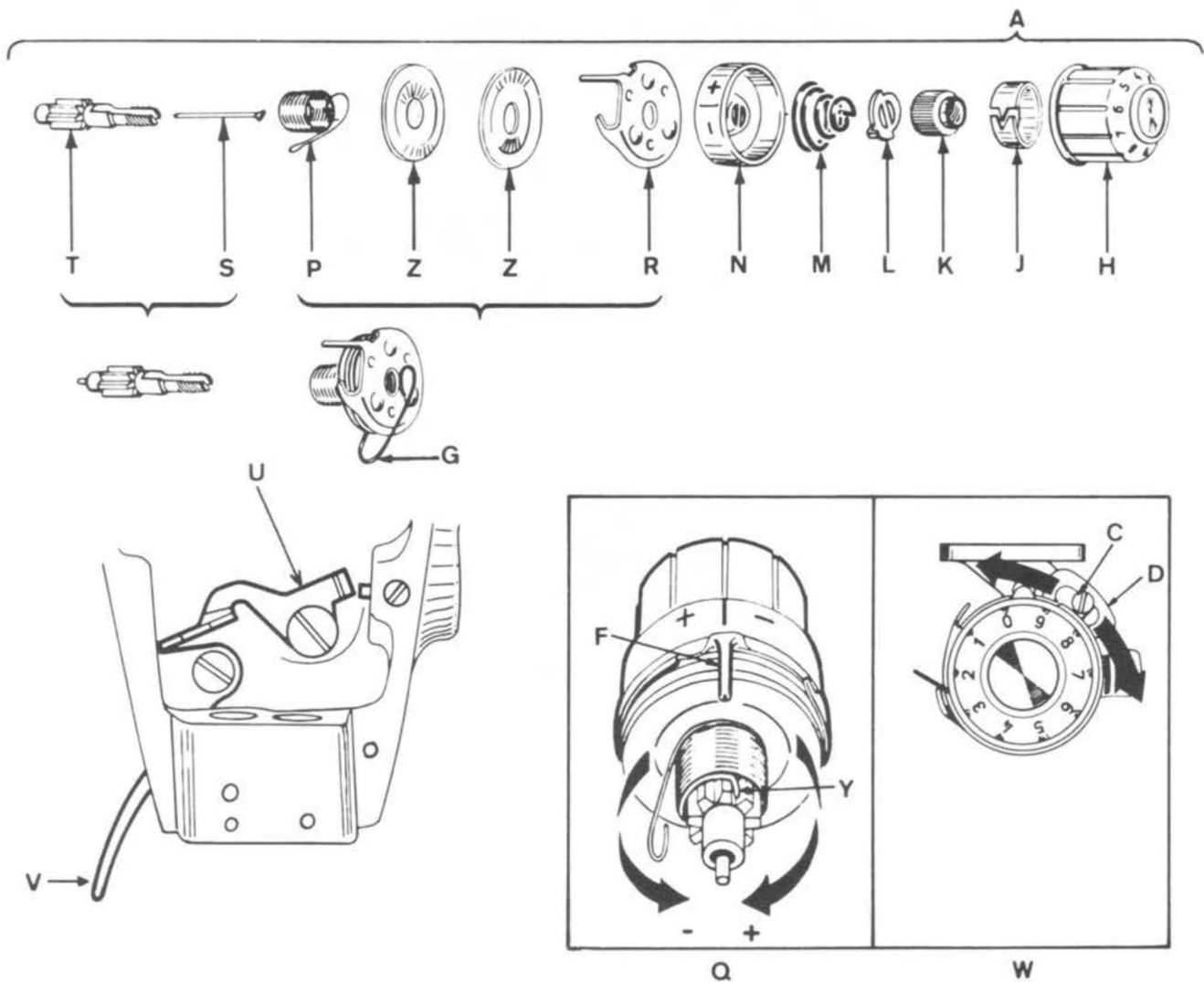
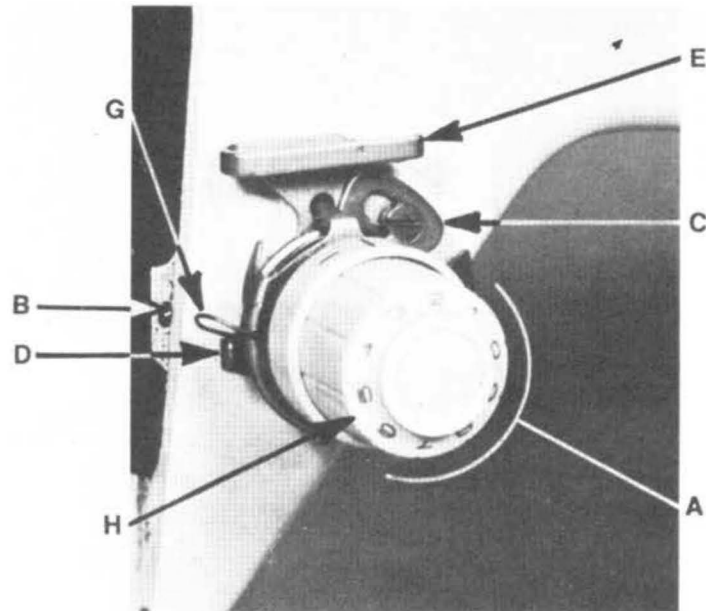
- 1) Remove **1**, **2** and **3**.
- 2) Remove retaining ring **A**.
- 3) Remove screw **B**. **This screw is left hand threaded.**
- 4) Remove thread take-up assembly **C**.
- 5) If it is necessary to remove connecting link **D**, then remove first **5**.
- 6) Loosen screw **E** with a minimum of 2 turns.
- 7) Remove hinge stud **F**.
- 8) Remove connecting link **D** and connecting stud **G**.
- 9) If it is necessary to remove thread take-up lever link hinge stud **H**, remove first, **7**.
- 10) Loosen screw **J**.
- 11) Remove hinge stud **H**.

Caution on reassembly:

- a) The flat on the collar of the hinge stud **F** should be parallel to the head of screw **E** before it is tightened.
- b) Screw **J** should be tightened only after complete reassembly of connecting link **D** and thread take-up **C**, checking that the unit moves freely.

Note: Observe adjustments **5** and **7** if these have been removed.





Needle Thread Tension

Removal of needle thread tension assembly:

- 1) Remove **2**.
- 2) Turn tension regulator dial **H** to "0" position against stop.
- 3) Loosen screw **B** and remove tension assembly **A**.
- 4) Remove screw **C**, check spring stop **D** and thread guide **E**.

Caution on reassembly:

- a) When reassembling, make certain that regulator dial **H** is turned to left until figure "0" is at top and against stop and extension **F** of thread guard **R** enters hole in arm casting.
- b) Lower presser foot.
- c) Tighten screw **B**.
- d) Position check spring hook **G** onto check spring stop **D**.

Disassembly of needle thread tension:

- 1) To disassemble needle thread tension, it is advisable to keep tension stud **T** in machine.
- 2) Pull off regulator dial **H** forward.
- 3) Unscrew adaptor **K** and remove stop washer **L**, tension spring **M** and tension spring cup **N**.
- 4) Remove thread guard **R**, tension discs **Z** and check - spring **P** together.
- 5) Loosen screw **B** and remove tension stud **T** together with releasing pin **S**.
- 6) Before reassembling tension stud **T**, check tension release lever **U** for free movement.
- 7) Insert tension stud **T** into arm casting. Slot of stud should be horizontal.
- 8) Tighten screw **B**.
- 9) Insert releasing pin **S** and check for free movement.

Assembly of needle thread tension:

- 1) Assemble check **P** together with tension discs **Z** and thread guard **R**.

Caution:

- a) The raised surfaces of discs **Z** should face each other.
- b) When assembling, check spring hook **G** of check spring **P** must be in downward position.
- 2) Reassemble tension spring cup **N** and insert tension spring **M**.
- 3) Insert stop washer **L** with hook pointing forward and down.
- 4) Screw on adaptor **K** and check for dragging motion. If adaptor **N** moves too easily, tension stud **T** is to be spread.
- 5) Lower presser bar lifter lever **V**.

Caution:

Turn adaptor **K** on tension stud **T** until there is no play but also no tension between the three tension discs.

- 6) Position check spring hook **G** onto check spring stop **D**.
- 7) Press on regulator dial **H** with figure "0" at top and turn to right.

Adjustments:

Refer to instructions describing the assembly of the needle thread tension.

Adjust check spring stop **D**:

Set machine for "Straight Stitch" in "Central Needle Position" and "Medium Stitch Length" and sew.

Check:

The check spring hook **G** should be at rest against check spring stop **D** as needle enters fabric up to its eye.

Setting:

Loosen screw **C** and move check spring stop **D** as required (refer to sketch **W**). Tighten screw **C**.

Adjust check spring tension:

Set machine for "Straight Stitch" in "Central Needle Position" and "Medium Stitch Length" and sew.

Check:

Tension on check spring **P** should be just sufficient to take up slack of needle thread until point of needle reaches fabric.

Tension of check spring **P** is correctly set after taking it off stop **D**, it hangs down in between 4 and 6 o'clock position.

Setting:

- 1) Turn regulator dial **H** to left to "0" position (stop).
- 2) Loosen screw **B** and remove needle thread tension assembly **A**.
- 3) Move tail **Y** of check spring **P** to increase tension (+), or to decrease tension (—), as shown in sketch **Q**.
- 4) Reassemble needle thread tension assembly **A** and tighten screw **B**.
- 5) Position check spring hook **G** onto check spring stop **D**.

Stitch width Regulator (252-257)

Removal:

- 1) Remove **1** and **2**.
- 2) Remove screw **A** and stitch width regulator lever **B**.
- 3) Remove screw **C**, spring washer **D** and stitch width regulator **E**.
- 4) Remove needle bar driving arm tension spring **F**.
- 5) Loosen screw **G**.
- 6) Remove needle bar driving arm **H**, pulling it forward and to the right.

Caution on reassembly:

- a) Spring washer **D** should be assembled with its concave face down.
- b) Spring **F** should be assembled with its longest tail to the left.

Note: Before doing the adjustments of this assembly group, check the adjustments on sideways setting of needle bar as given in **18**.

Adjustment of bight stops:

Adjustment of Stop N (Straight stitch)

Check:

Set stitch width regulator lever **B** all the way to the left, as in fig. J.

Turning handwheel there should be no sideways movement of needle bar vibrating bracket **L**.

Setting:

- 1) Loosen screw **M**.
- 2) Rotate stop **N** away from regulator **E**.
- 3) Move regulator lever **B** to middle position.
- 4) Move regulator lever **B** slowly back, towards the left while at the same time turning handwheel, until needle bar vibrating bracket **L** does not perform any sideways movement and follower **R** does not interfere on any point of pattern cams.
- 5) Rotate stop **N** back against stitch width regulator lever **B** and tighten screw **M**.
- 6) Repeat check.

Adjustment of stop T (Max. stitch width):

Check:

- 1) Set stitch width regulator lever **B** all the way to the right as in fig. Q.
- 2) Turn handwheel until the cam follower **R** is on bottom or on top crest of zig-zag cam pattern as in fig. P.
- 3) Slowly move zig-zag bight amplitude lever **B** from left to right while moving the needle position lever **V** to and fro.
- 4) When there is no more movement of needle bar, the bight amplitude lever **B** must be against the stop.

Setting:

- 1) Loosen screw **S** and rotate stop **T** away from stitch width regulator **E**.
- 2) Move regulator lever **B** to middle position.
- 3) Move regulator lever **B** slowly back towards the right while at the same time actuating needle position lever **V** right and left, until needle bar vibrating bracket **L** does not have any sideways movement.
- 4) Rotate stop **T** back against stitch width regulator **E** and tighten screw **S**.
- 5) Repeat check.

Adjustment of stitch width lever to control panel graphics:

Check:

- 1) Assemble **1**.
- 2) Move stitch width lever **B** all the way to the left as in fig. J.
- 3) The marking line on the stitch width lever **B** knob should be under the symbol for straight stitch on the control panel.

Setting:

- 1) Remove **1**.
- 2) Loosen screw **A**.
- 3) Mover lever **B** to coincide with straight stitch symbol, holding the regulator **E** against the stop **N**.
- 4) Tighten screw **A**.

Sideways adjustment of needle bar:

Note: Before doing this adjustment, check adjustment of gear mesh as given in **12**.

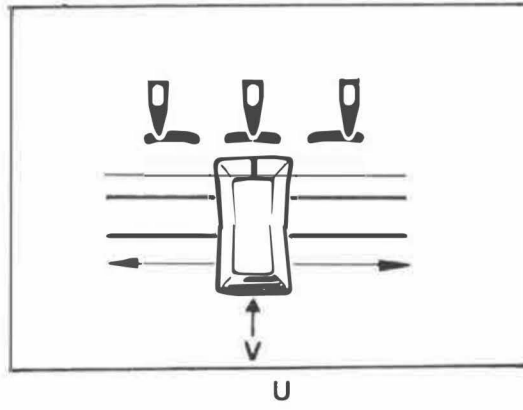
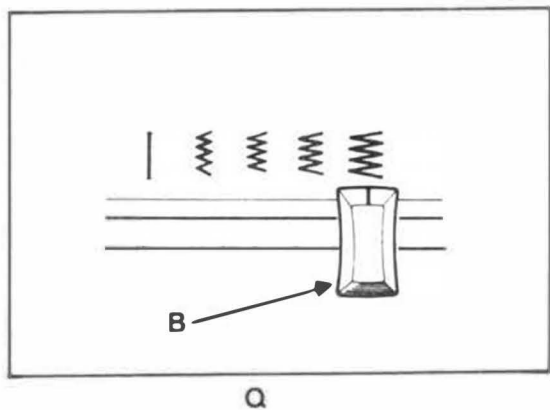
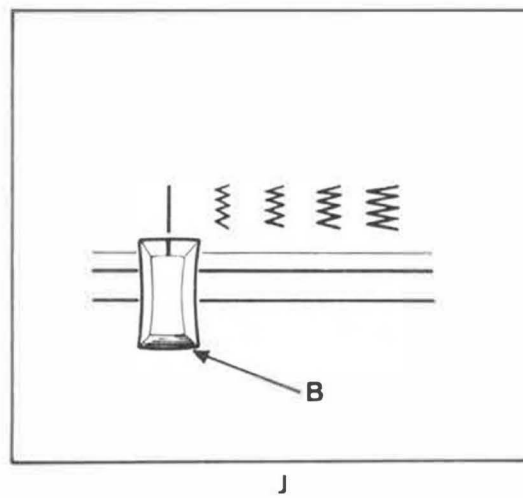
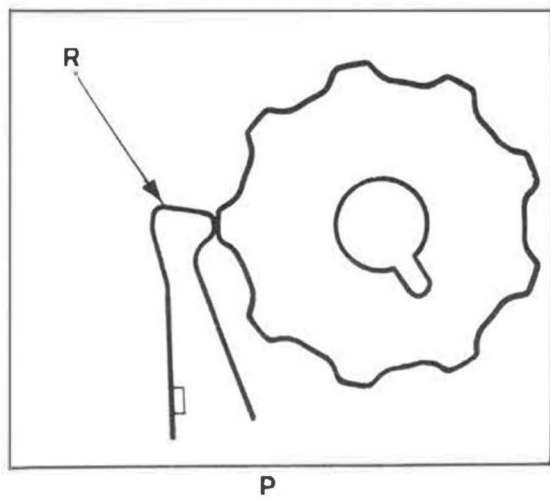
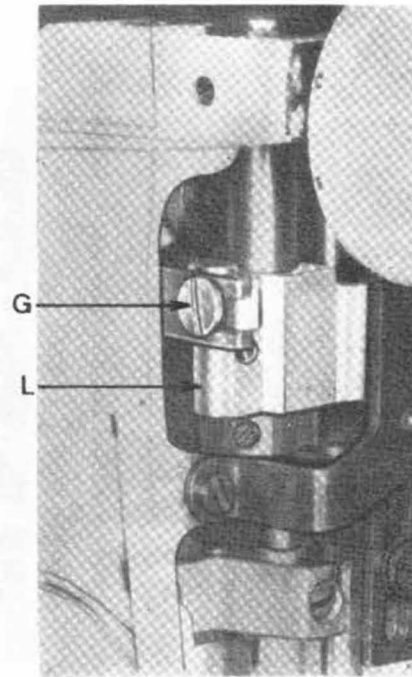
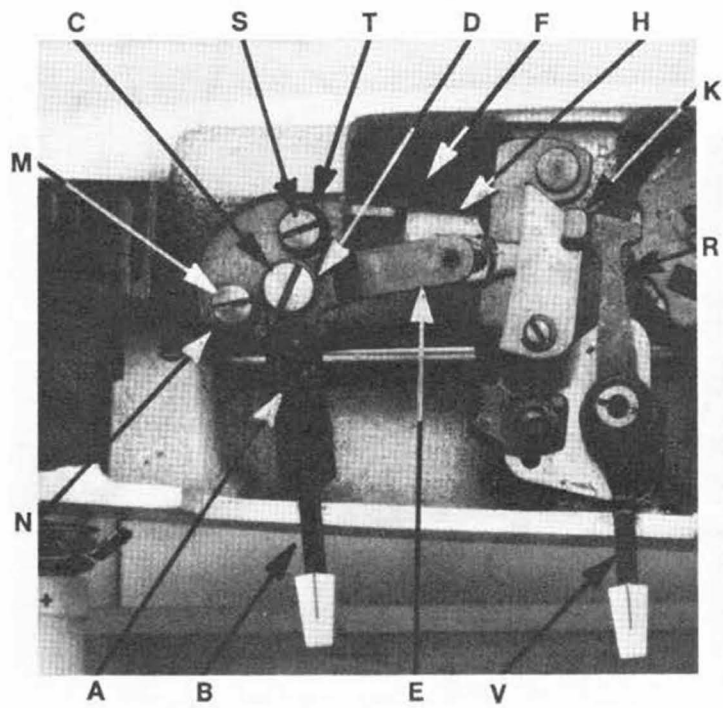
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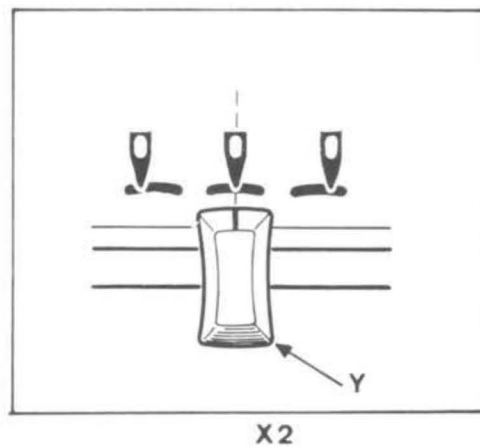
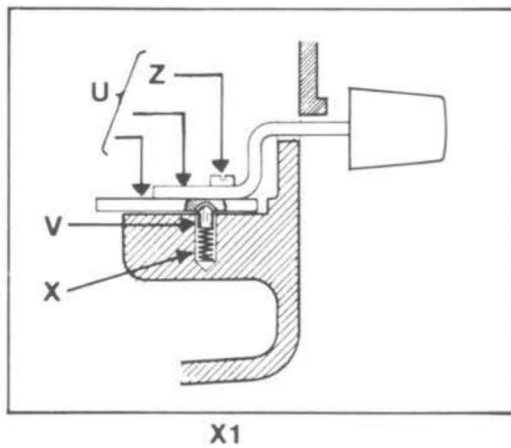
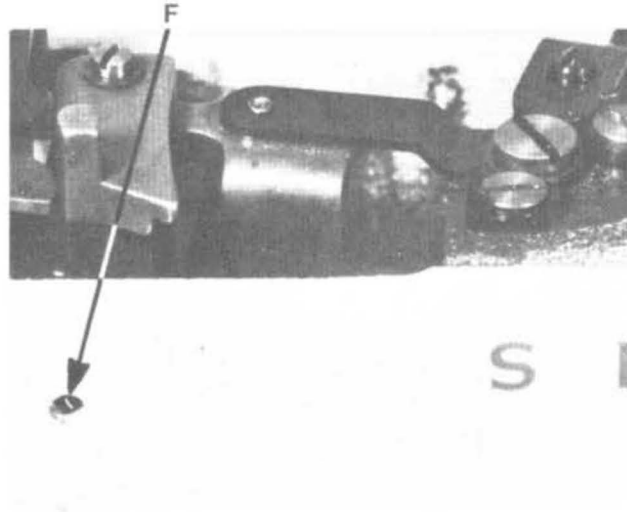
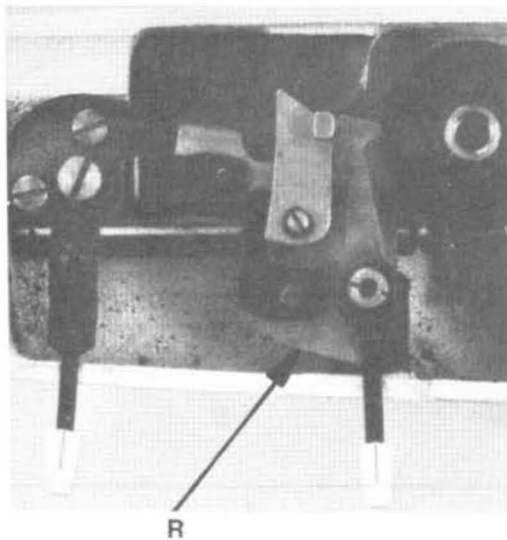
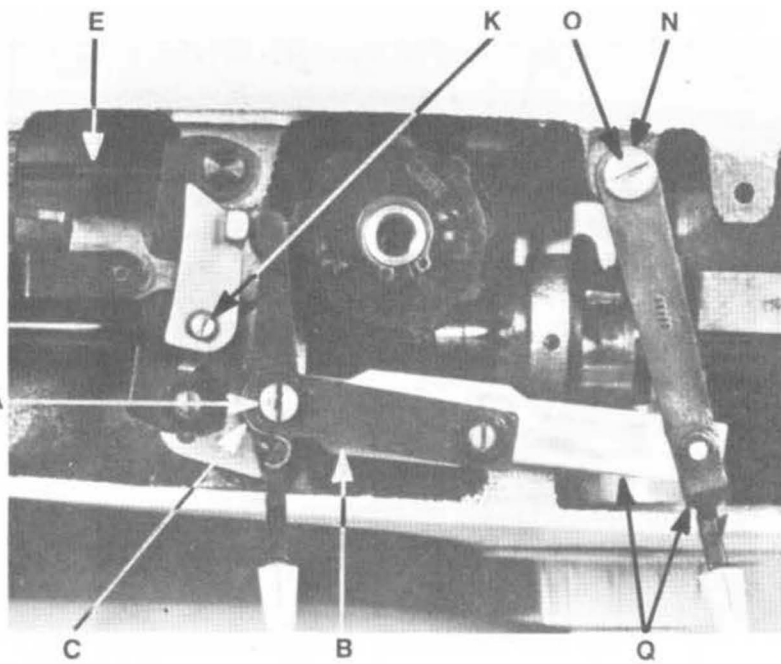
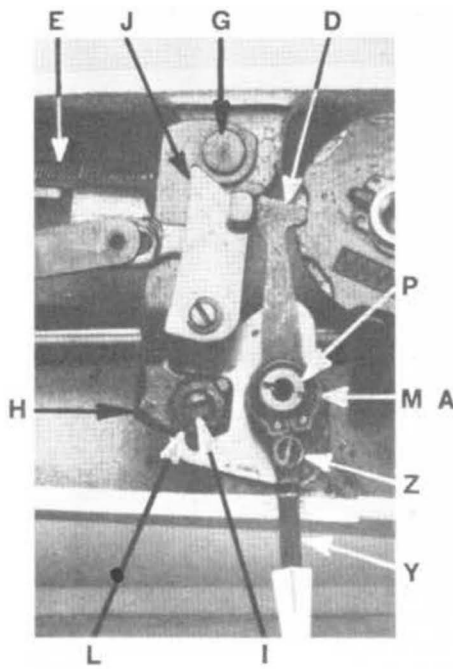
- 1) Install a straight stitch throat plate and a size 14, No. 2020 (15 x 1) needle.
- 2) Set stitch width lever **B** all the way to the left (straight stitch) as indicated in fig. J.
- 3) Turn handwheel until the needle penetrates through the needle hole in the throat plate up to the needle eye. In this position the needle should be centered in the needle hole.

Setting:

- 1) Loosen screw **G** and move needle bar vibrating bracket **L** until needle is centered in the needle hole, while holding the needle bar driving arm against regulator block **K** (to keep it from shifting).
- 2) Tighten screw **G**.
- 3) Repeat check.

Note: After this adjustment, check sideways setting of needle bar as in **11**.





Needle Position and Cam Follower Mechanism

Removal:

- 1) Remove **1** and **2**.
- 252 2) Set stitch width lever on "Straight Stitch".
- 3) Remove screw **A**.
- 4) Remove cam disengaging lever **B**.
- 5) Remove spring **C**.
- 6) Remove follower **D**.
- 7) Remove tension spring **E**.
- 252-257 8) Loosen set screw **F**.
- 9) Remove stud **G**.
- 10) Move stitch width lever to the right "Max. width".
- 11) Remove regulator block support **H** with eccentric screw **I**, lock nut **L**, slide **J** and hinge **K**.
- 257 12) Remove retaining ring **M** and washer.
- 252 13) Remove screw **N** and spring washer **O**.
- 252-257 14) Remove cam follower hinge pin **P**.
- 15) Remove stitch pattern selector lever assembly **Q**.
- 16) Remove needle position lever assembly **R** (see caution below).

Caution:

- 252-257 When removing needle position lever assembly **R**, be careful not to loose positioning pin **V** and the spring **X**, as the pin **V** will pop out by decompression of spring **X** - See fig. **XI**.

Caution on reassembly:

- a) Make certain spring **X** and positioning pin **V** have been inserted and that pin **V** does not pop out while assembling needle position lever assembly **U**.
- b) When inserting positioning pin **V** make certain it is inserted with the rounded end up.
- 252 c) When assembling lever **Q**, screw **N** and spring washer **O**, make certain the spring washer **O** is placed with concave face downward.
- 252-257 d) Before assembling regulator block support **H**, make certain that the eccentric portion of eccentric screw **I** is turned to the rear.

Adjustments:

Note: Before performing the adjustments of this group, check the adjustment on sideways setting of needle bar and the stitch width lever stops as described in **10**.

Lateral adjustment of needle position:

- 1) Turn handwheel until the cam follower is on a crest of zig-zag cam pattern.
- 2) Move needle position lever **Y** to left.
- 3) Moving zig-zag bight amplitude lever to and fro there must not be any movement of needle bar.
- 4) If there is movement of needle bar, loosen the nut **L** and turn the eccentric screw **I** to right or left until the movement disappears completely.
- 5) Tighten the nut **L** while holding the eccentric screw **I**.
- 6) Check center position of needle in throat plate and readjust, if necessary.

Caution:

Do not turn eccentric screw **I** more than a $\frac{1}{4}$ turn either way to maintain eccentricity towards the rear.

Adjustment of needle position lever to graphics on control panel:

Check:

- 1) Assemble **1**.
- 252-257 2) Set needle position lever **S** on "Center Needle Position".
- 3) The marking line on lever knob **Y** should be right under the symbol for center needle position on the control panel as shown in fig. **X2**.

Setting:

- 1) Remove **1**.
- 252-257 2) Loosen screw **Z**.
- 3) Move lever knob **Y** as required and tighten screw **Z**.

Cam Stack and Shaft (252-257)

Removal:

- 1) Remove **1**.
- 2) Set stitch width lever on « Straight Stitch ».
- 3) Set needle position lever on « Right Needle ».
- 4) Loosen screw **A**.
- 5) Remove cam stack assembly **B**.

Caution on Reassembly:

When reassembling cam stack unit **B**, make certain that the eccentric portion of shaft **C** faces to the right as shown in fig. **D**.

Gear mesh adjust:

- 1) Loosen set screw **A**.
- 2) Rotate eccentric shaft **C** clockwise until there is no play between worm wheel and worm on shaft but without binding.
- 3) Tighten set screw **A** and check for free movement by turning handwheel for a complete rotation of worm wheel: (18 rotations of handwheel).

Note: After this adjustment check adjustment on sideways setting of needle bar as in **10** then as in **11**.

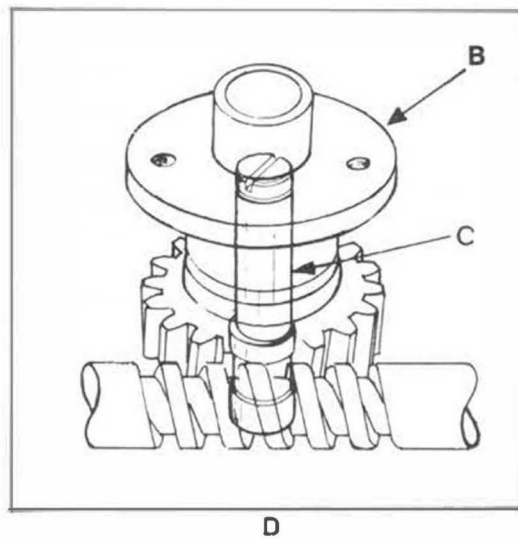
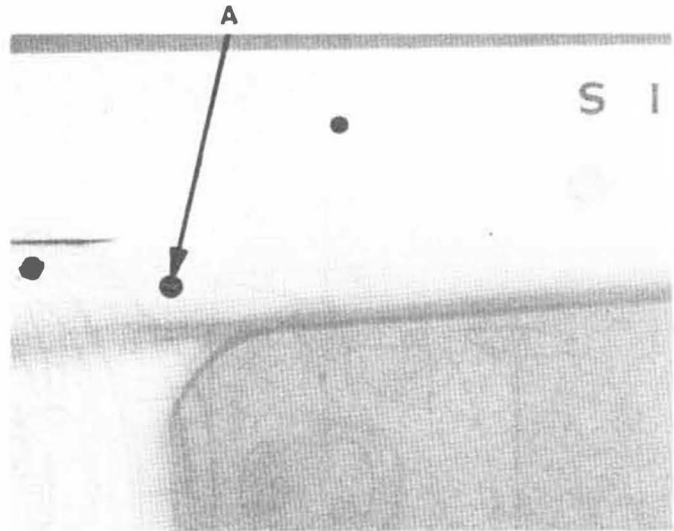
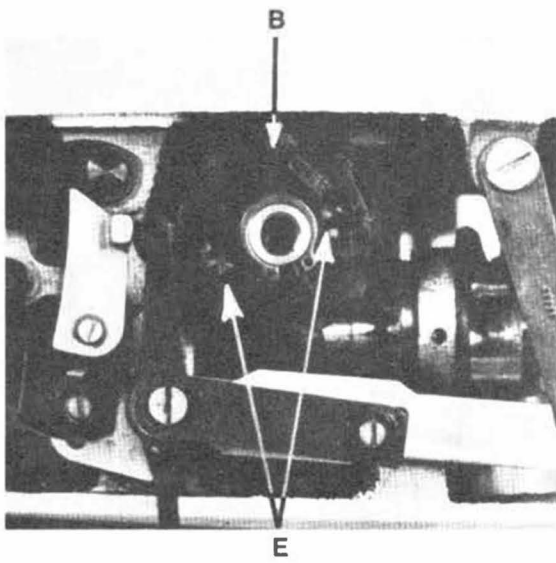
Pendulum timing adjust:

Check:

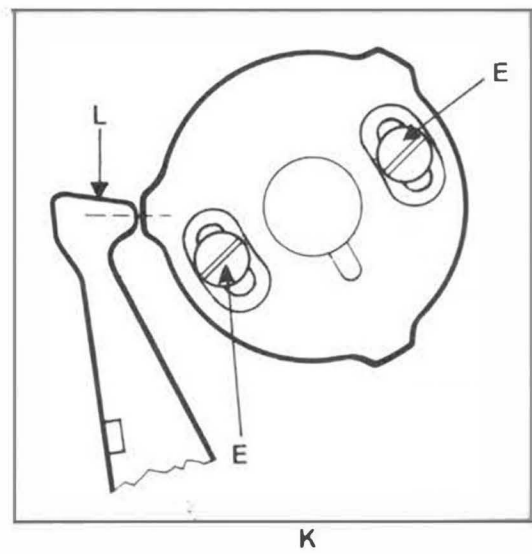
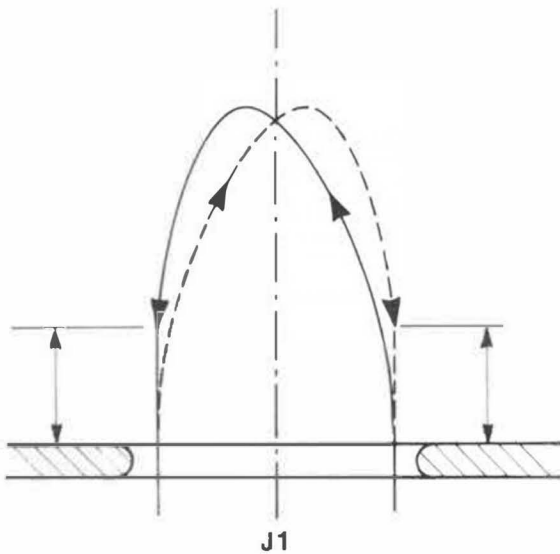
- 1) Place a piece of paper under needle.
- 2) Set needle position lever on « Center Needle » and stitch width lever on maximum stitch width.
- 3) The correct timing of the pendulum movement of the needle bar can be observed by manually operating the handwheel in the normal operating direction. The point of the needle should move upward until the needle is completely out of the paper before moving in the lateral direction and should reach its peak of ascent slightly past center of the two extreme positions of the needle. On the downward stroke all lateral motion should cease when the needle point is 3 to 6 mm (.12 to .24) above the throat plate. See fig. **J1**. The needle must return into the opposite needle hole precisely.

Setting:

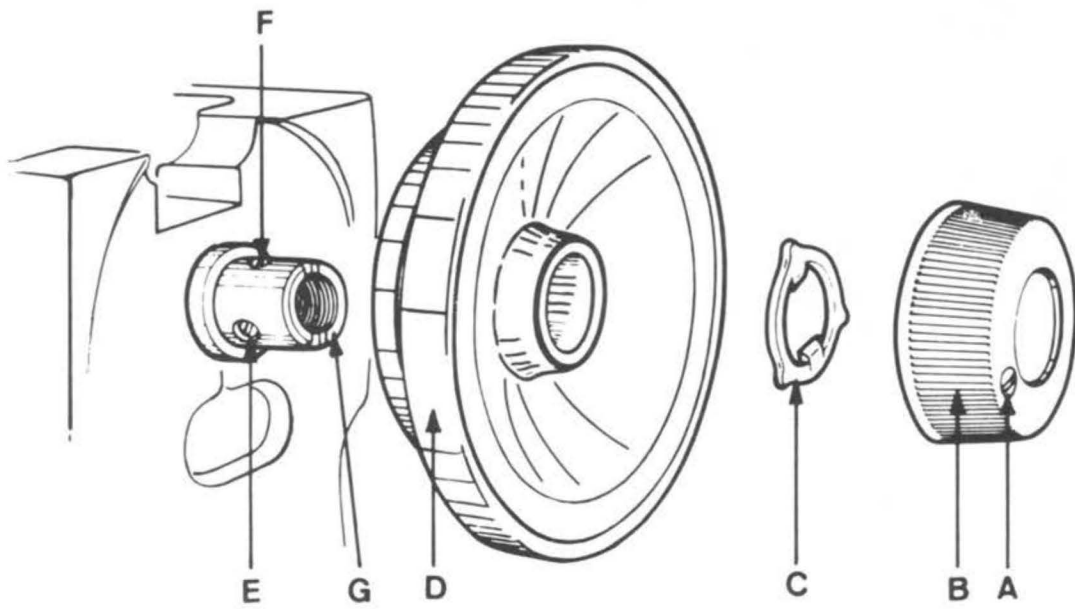
- 1) Loosen slightly the two screws **E**.
- 2) Turn handwheel until cam follower **L** is in a position corresponding to one of the high lobes on the cam and the needle bar is in its lowest position. Maintaining the needle bar in its lowest position, turn the cam stack by hand so that the center point of cam follower **L** is in line with the center of the high lobe of the cam as shown in fig. **K**.



D



K



Hand Wheel and Stop Motion

Removal:

- 1) Loosen motor mounting bracket screw and remove belt.
- 2) Loosen screw **A** with at least 3 turns.
- 3) Remove stop motion screw **B**, stop motion washer **C**.
- 4) Remove hand wheel **D**.
- 5) Loosen the screws **E** and **F** (conical tipped), giving at least 1 turn each.
- 6) Remove bushing **G**.

Caution on reassembly:

- a) Position bushing **G** so that screw **F** (with conical tip) is aligned with slot in arm shaft.
- b) Before tightening screws **E** and **F**, press bushing to the left and arm shaft to the right.
- c) Tighten first screw **F** then screw **E**.
- d) Check that there is no lateral play in arm shaft.
- e) The bent ears of the stop motion washer **C** should be turned away from stop motion screw **B** (to the left).
- f) After tightening screw **A** check for correct function of stop motion. If not correct, then loosen screw **A**, remove stop motion screw **B** and rotate stop motion washer **C** 180° and reassemble.

Removal:

- 1) Remove **1**, on which the bobbin winder is preassembled.
- 2) Remove screw **A** and spring washer **B**.
- 3) Remove assembly **C**.

Caution on reassembly:

When reassembling, make certain that spring washer **B** is located with the concave face downward.

Adjustment of winding limit stop:**Check:**

- 1) Assemble **1**.
- 2) Fill a bobbin until it is disconnected automatically.
- 3) The bobbin should be relatively full, without overfilling.

Setting:

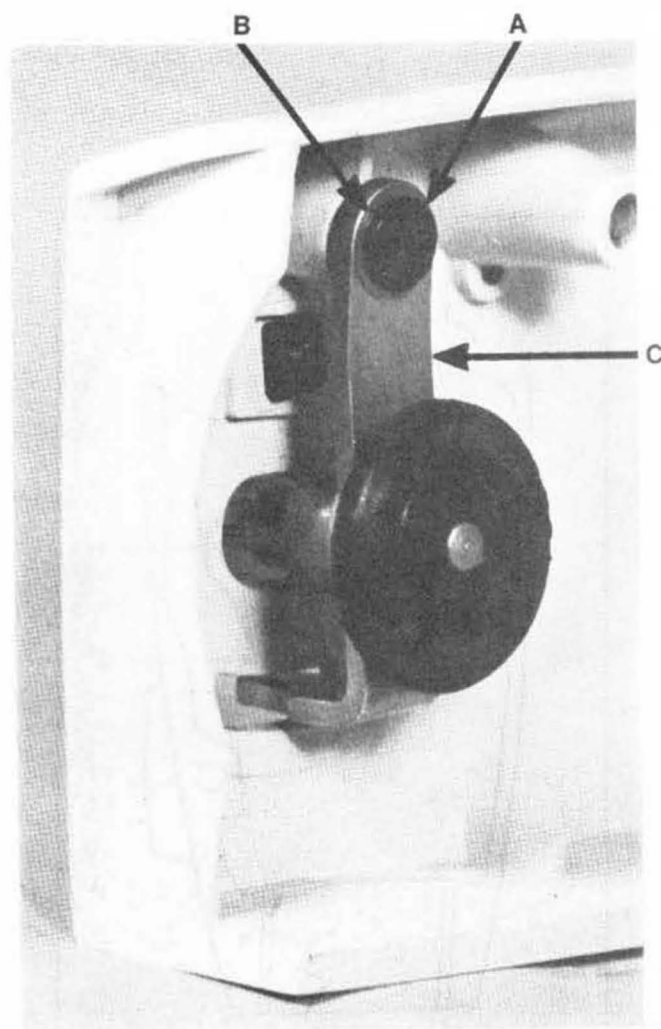
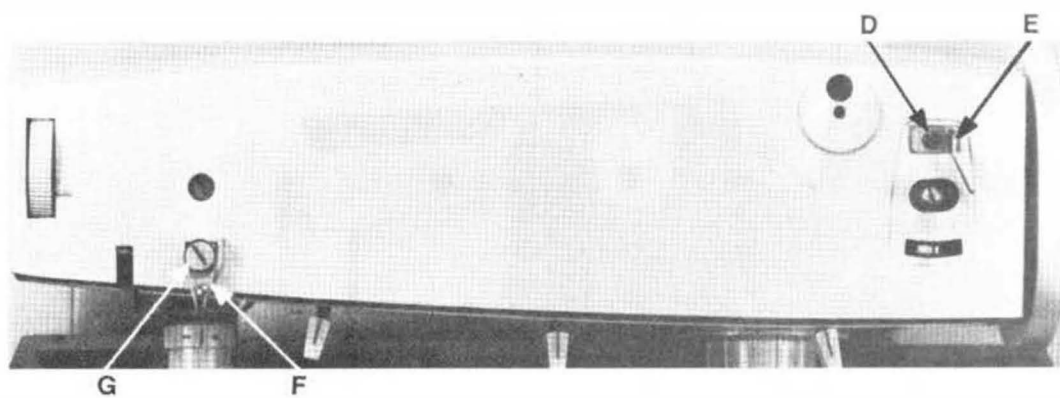
- 1) Loosen screw **D**.
- 2) Move bobbin winding stop latch **E** as required.
- 3) Tighten screw **D**.

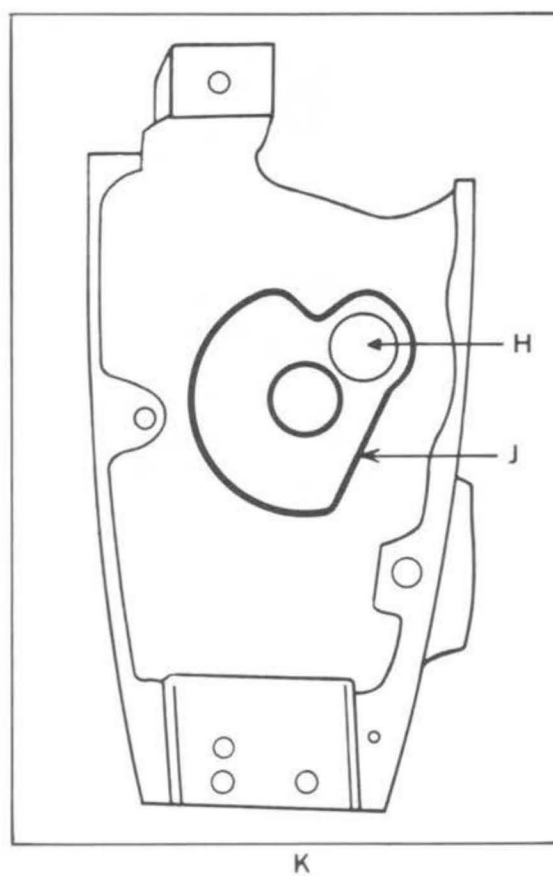
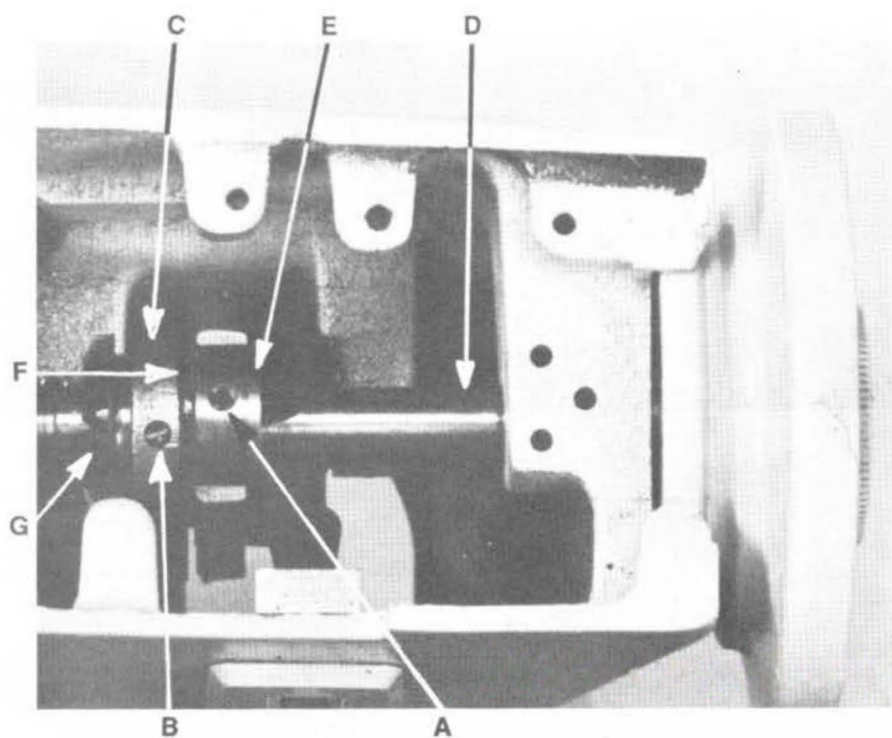
Adjustment of even wind:**Check:**

- 1) Assemble **1**.
- 2) Fill a bobbin and watch the distribution of thread for evenness.

Setting:

- 1) If there is more thread on top half of bobbin then lower the bobbin winding thread tension **F** by turning screw **G** clockwise.
- 2) If there is more thread on the lower half of the bobbin, then raise bobbin winding tension **F** by turning screw **G** counterclockwise.





Horizontal Arm Shaft

Removal:

- 1) Remove **1** , **2** , **3** , **5** , **7** , **8** , **12** and **13** .
- 2) Loosen screw **A** by approximately 4 turns.
- 3) Turn shaft until gear set screw **B** appears and loosen it approx. 4 turns.
- 4) Pull shaft **D** carefully to the left, removing to the right feed fork cam **E** and spacer **F**.
- 5) Remove shaft **D**.
- 6) Lift up connecting rod **C** and remove carefully conical gear with eccentric **G** to the left. (Caution, it may be necessary to screw back in set screw **B** to avoid scratching bearing surface of connecting rod **C**).

Caution on reassembly:

- a) Position gear with eccentric **G** so that screw **B** is up over the slot in arm shaft **D** corresponding to hole **H** in counterweight **J** when hole **H** is up as shown in figure **K**.
- b) Adjust the gear mesh with eccentric **G** so there is not play between arm shaft gear and vertical shaft gear, before tightening screw **B**.
- c) Check hook timing as explained in **19** .

16

Vertical Arm Shaft

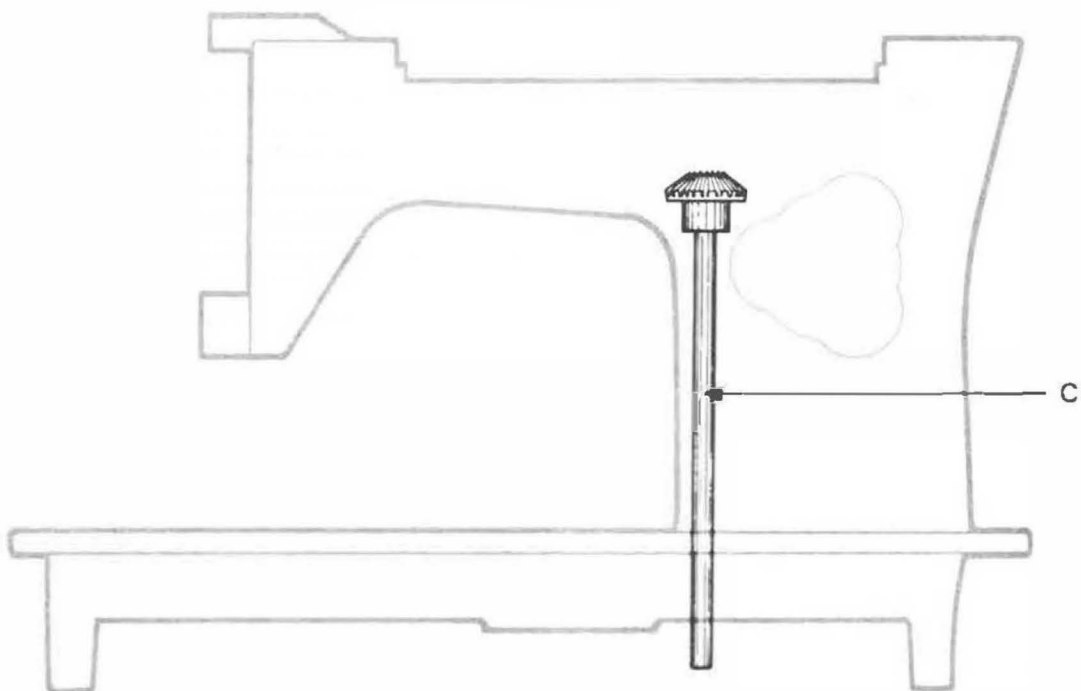
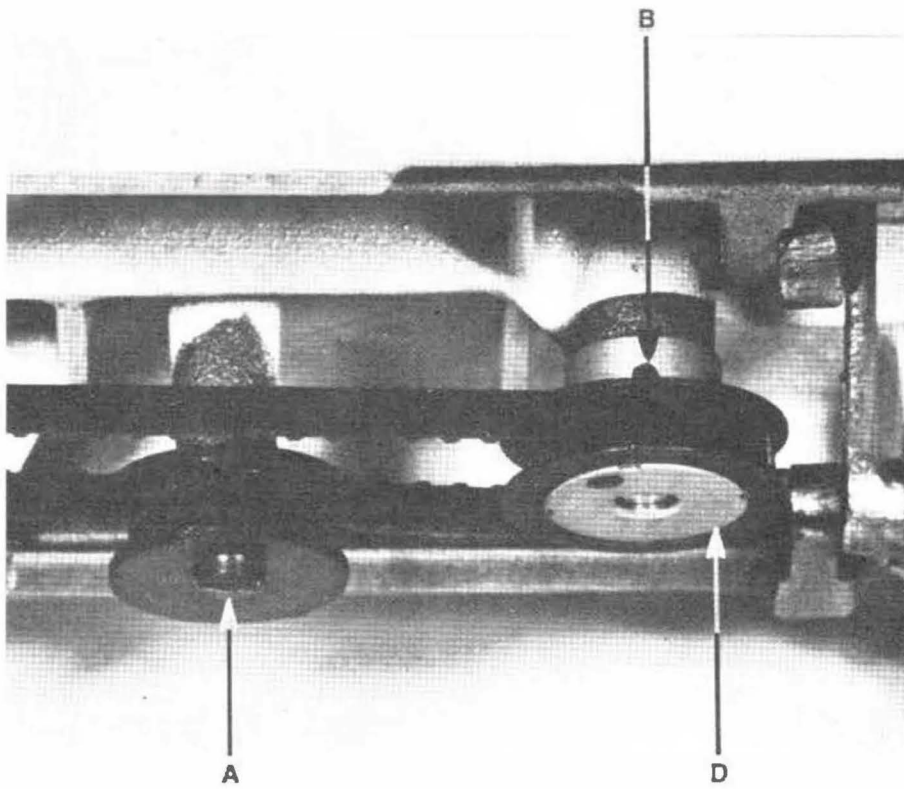
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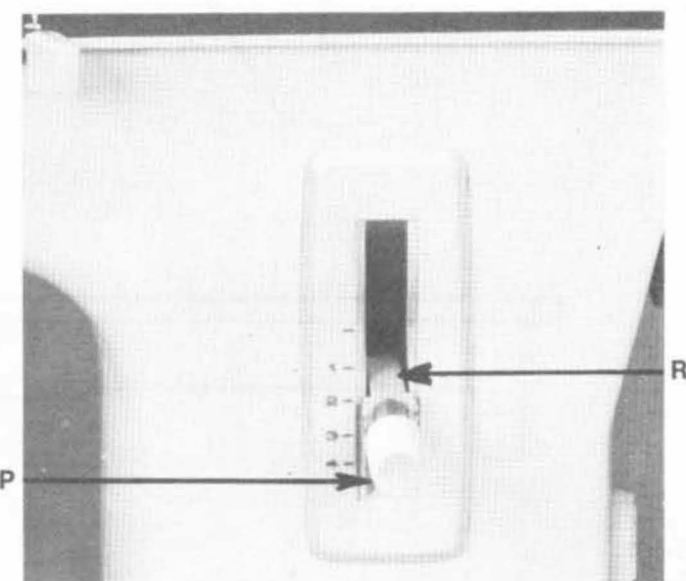
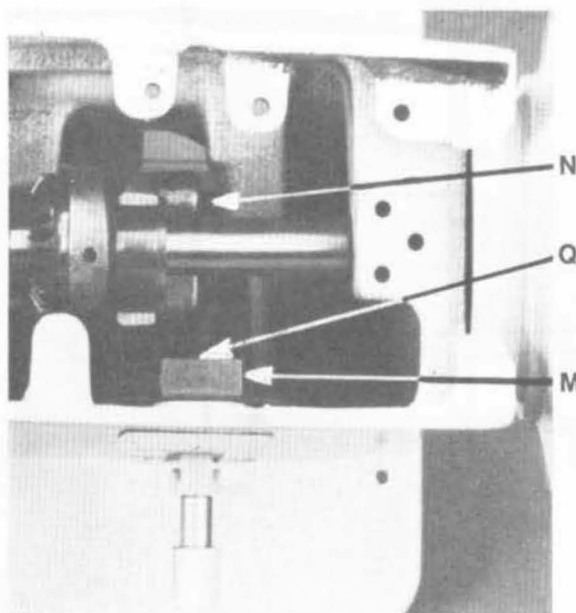
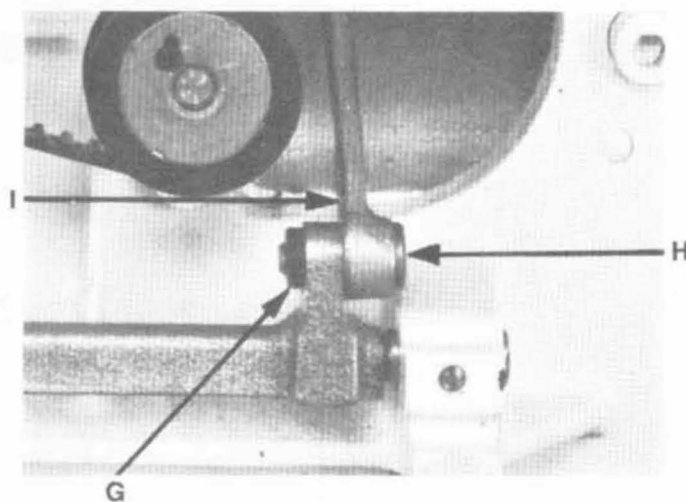
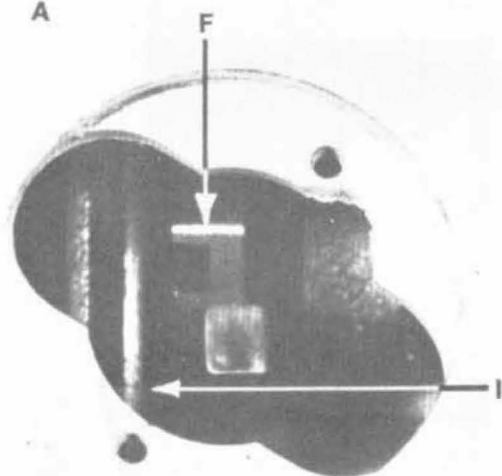
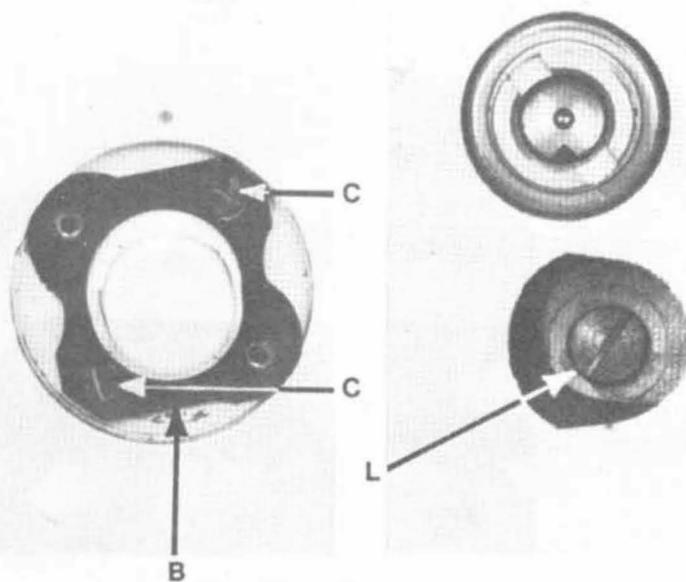
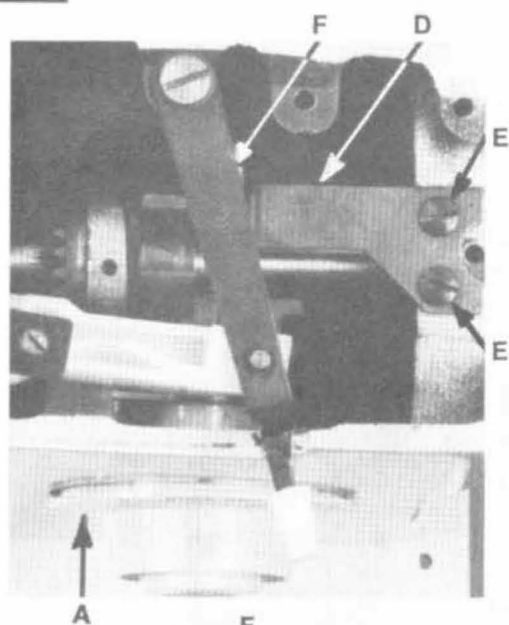
- 1) Remove **1** **2** **3** **5** **7** **8** **12** **13** and **15**
- 2) Loosen screw **A**.
- 3) Loosen screws **B**.
- 4) Pull the vertical arm shaft **C** upward, holding on to pulley **D**.

Caution on reassembly:

Screw **B** should fix on to flat on lower end of shaft **C**.

Note: Adjust belt tension as explained in **20** and hook timing as explained in **19**





Stitch Length Regulator and Feed Fork

Removal:

- 1) Remove **1** and **13**
- 252 2) Remove dial **A**, by pulling off forward.
- 3) Remove screws **C** and remove assembly **B**.
- 4) Remove spring **F** and then remove screws **E**.
- 5) Remove lever assembly **D**.
- 6) Remove screw **L** and remove feed regulator **F**.
- 7) Remove the nut **G** and eccentric screw **H**.
- 8) Slide off feed fork **I** and the slide block.
- 257-259 9) Open thumb nut **P** completely.
- 10) Slide off stitch indicator retaining plate **M**.
- 11) Unscrew and remove feed regulator hinge screw **L** with its friction washer.
- 12) Remove feed regulator **N** complete with lever screw **Q**, spring, stitch indicator **R** and thumb nut **P** (then if necessary disassemble this complex).

Caution on reassembly:

Assemble eccentric screw **H** with the eccentric part towards the front.

Adjustment of « feed »:

Check:

- 252 1) Turn feed dial to "0".
- 257-259 2) Position feed regulator lever **C** to no feed position.
- 252-257-259 3) Remove needle and place a piece of material under presser foot.
- 4) Lower presser foot and operate machine. There should now be no feeding of material.

Setting:

- 252 1) Remove **1**.
- 2) Loosen the two screws **E** and reset position of plate **D** (usually towards handwheel end).
- 3) Recheck and reset (if necessary).
- 257-259 4) Move feed regulator lever **P**, up or down until there is no more feeding of material.
- 5) Slightly bend lever until indicator **R** is in line with no feed position on stitch regulator plate **O**.

Feed Actuating Rod

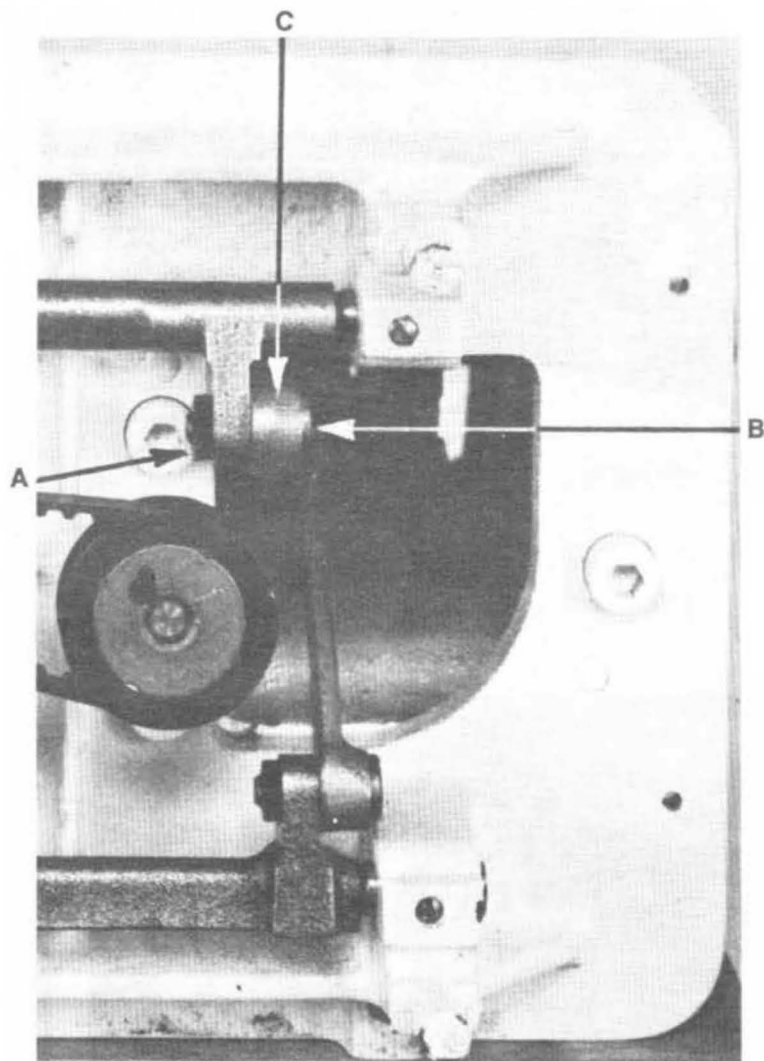
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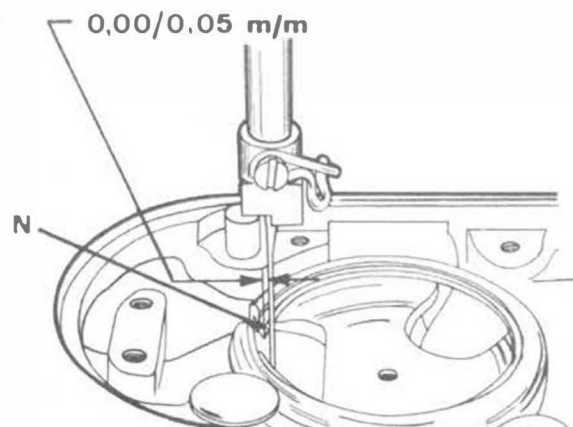
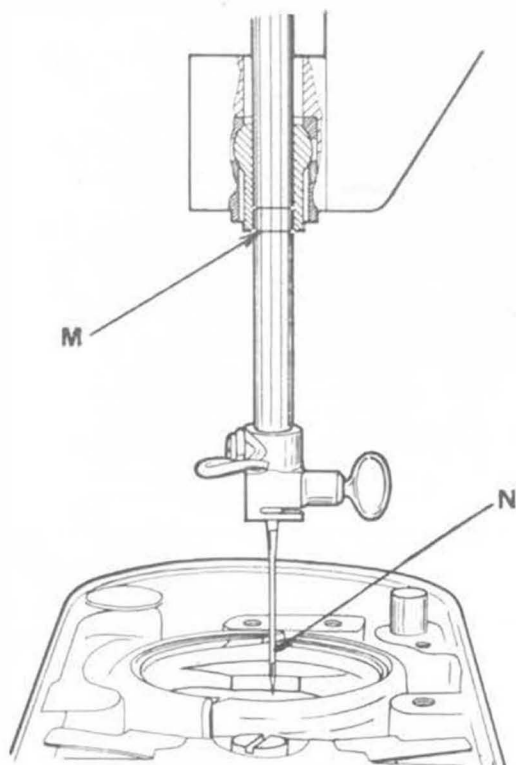
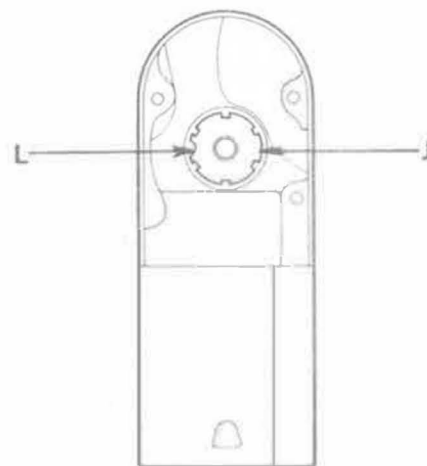
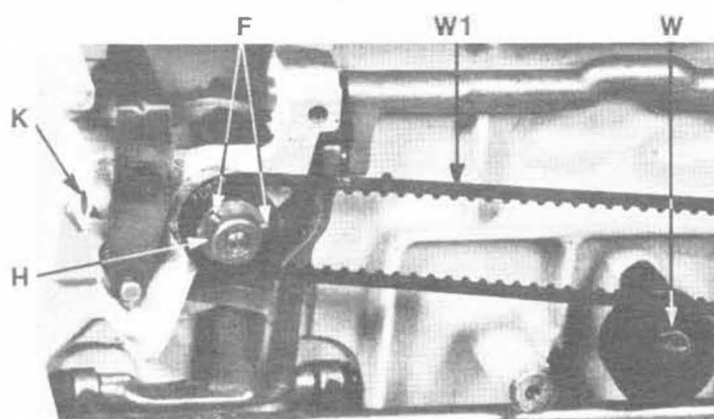
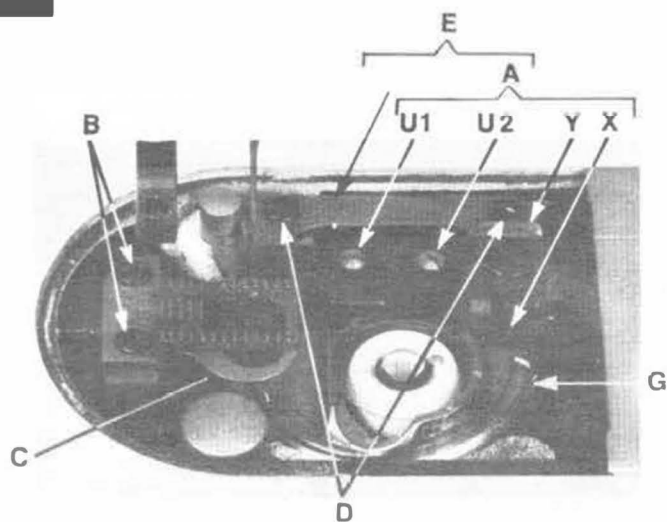
- 1) Remove **1** , **2** , **3** , **5** , **7** , **8** , **12** , **13** , **15** , **16** .
- 2) Remove nut **A**.
- 3) Remove eccentric screw **B**.
- 4) Remove connecting rod **C**.

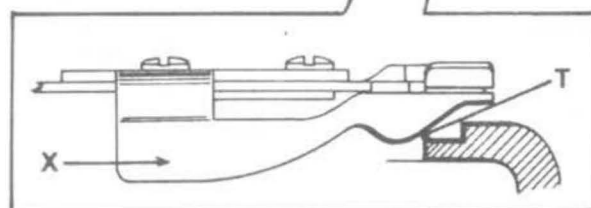
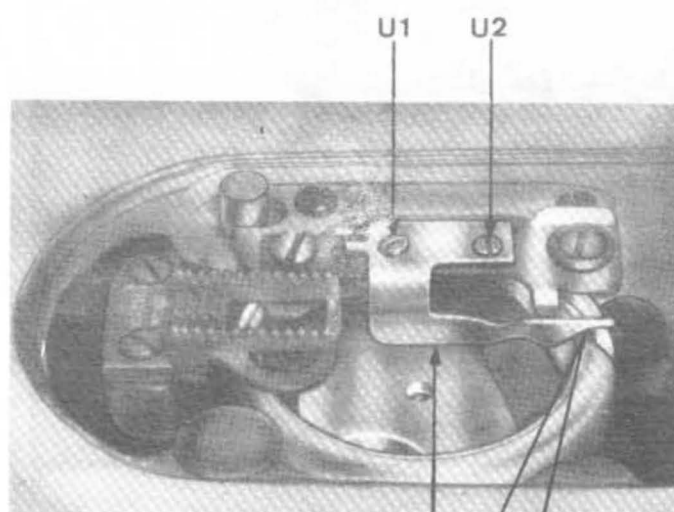
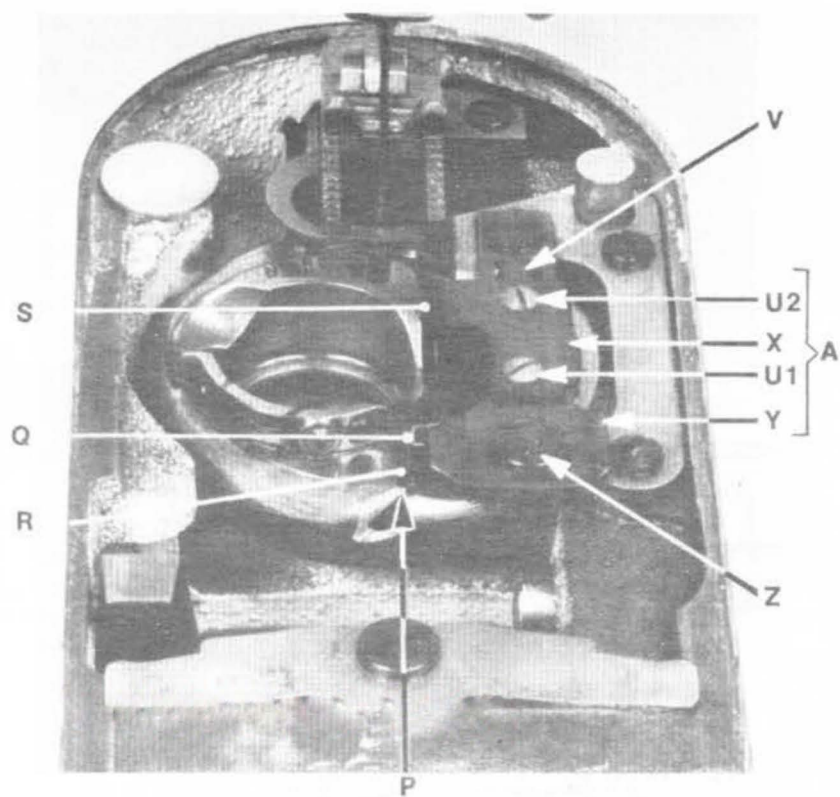
Caution on reassembly:

Assemble eccentric screw **B** with the eccentric part towards the rear.

Note: Check adjustment indicated in **21** .







Rotating Hook

Removal:

- 1) Remove **1** and **2**.
- 2) Remove needle, presser foot, open bed slide plate and remove throat plate.
- 3) Lift up cushion spring **A** and push it to the right. Remove bobbin case. Reposition cushion spring.
- 4) Remove both screws **B** and remove feed dog **C**.
- 5) Remove both screws **D** and the bobbin case position bracket **E**.
- 6) Loosen screw **W** to remove tension on belt **W1**.
- 7) Loosen both screws **F**.
- 8) Remove rotating hook **G**, pulley **H** and belt **W1**.
- 9) If necessary, remove eccentric bushing **J** by first loosening set screw **K**.

Caution on Reassembly:

- a) Assemble the eccentric bushing **J** with the indicator **L**, showing position of eccentricity, towards the left as shown in the sketch. Rotate it to adjust distance of needle from hook point.
- b) Belt **W1** should be assembled together with pulley **H**.
- c) Press rotating hook **G** downwards and pulley **H** upwards prior to tightening the two screws **F**.

Note: Before doing the adjustment of this group, check belt tension adjustment as in **20**. Needle Bar height adjustment as in **5**, centering of needle bar as in **7** and sideways setting of needle bar as in **10** and **11**.

Adjustment of hook timing:

Check:

- 1) Set needle position selector lever on center needle position and stitch width selector lever on straight stitch.
- 2) Place on No. 18 needle in needle clamp.
- 3) Remove throat plate.
- 4) Turn handwheel until lower timing mark on needle bar is aligned with lower end of needle bar bushing on the upward stroke of needle bar.
- 5) Under these conditions, hook point **N** should be in the center behind the needle as shown in sketch.

Setting:

Loosen both screws **F**, turn hook **G** to the correct position all the while retaining needle bar in the position indicated above under check. Then, without disturbing the setting, press down on hook **G** while pressing up on pulley **H** and tighten both screws **F**.

Adjustment of hook point to needle distance:

Check:

- 1) Place needle position selector lever on center needle position and stitch width selector lever on straight stitch.
- 2) Remove presser foot.
- 3) Remove throat plate.
- 4) Remove bobbin case.
- 5) Remove feed dog **C**.
- 6) Place a No. 18 needle in needle clamp.
- 7) Turn hand wheel until hook point is in the center behind needle.
- 8) The distance between hook point and No. 18 needle should be 0 to 0.05 mm. (.000-.002).

Setting:

- 1) Loosen screw **K**.
- 2) Turn hook bushing **J** to the left or right, as required, to obtain correct distance between hook point **N** and needle.

Caution:

- a) If hook bushing **J** is hard to turn, then first remove rotating hook **G**.
- b) Never turn hook bushing **J** more than 1/4 turn in either direction.

Thread gap adjustment:

Check:

- 1) Open bed slide plate.
 - 2) Remove throat plate.
 - 3) Turn hand wheel until hook point is in the thread release position as shown in **P**.
- Observation:** The hook makes 2 rotations to each stroke of needle bar. The thread is released on the first rotation after hook has picked up thread loop from needle.
- The gap at point **Q** should be between 0.30 and 0.50 mm. (.012-.020). The gap at point **R** should be between 0.30 and 0.40 mm. (.012-.016) and the gap at point **S** should be between 0.64 and 1.15 mm. (.025-.045).
- 4) Remove bobbin case.
 - 5) Using a wire feeler gauge check gap at point **T** which should be between 0.38 and 0.60 mm. (.015-.023).

Setting:

- 1) Loosen screws **U1** and **U2** and visually adjust point **V** of spring **K** to the center of slot on support **Y**. That way the gap at point **S** will be correctly set.
- 2) Tighten screw **U2** slightly.
- 3) Moving spring **X** rearwards or forwards, set adjustment of gap at point **T**.
- 4) Adjust gap at point **Q** by turning spring **X** around screw **U2**. Tighten both screws **U1** and **U2**.
- 5) Replace bobbin case.
- 6) Loosen screw **Z** and move unit **X** to the left or right to adjust gap at point **R**.
- 7) Tighten screw **Z**.

Note: Adjust feed dog as described in **21**.

Hook Drive Belt

Removal:

- 1) Loosen the 2 screws **A**.
- 2) Loosen screw **B**.
- 3) Remove pulley **C** together with belt **D**.

Adjustment of belt tension:

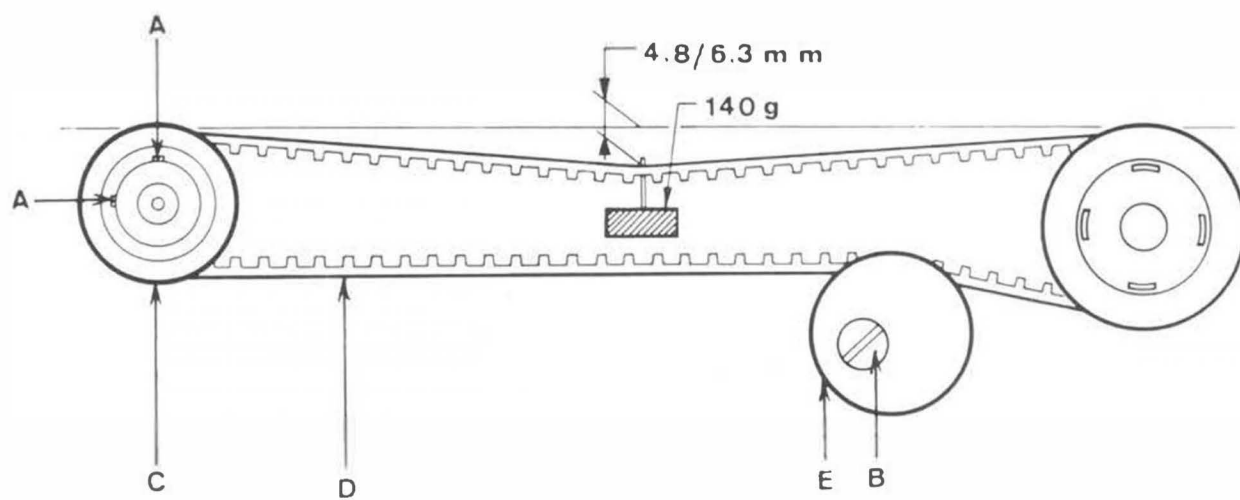
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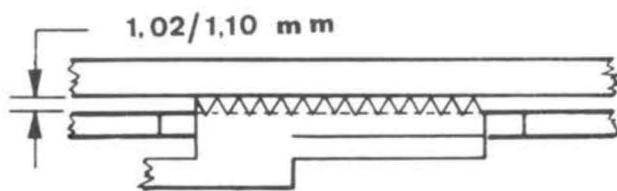
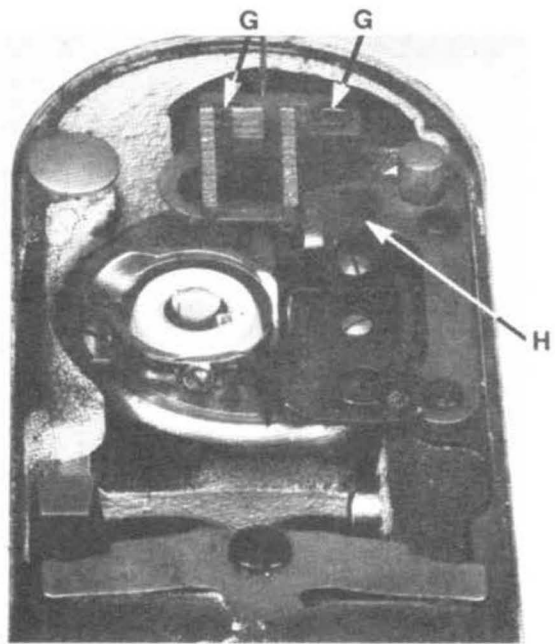
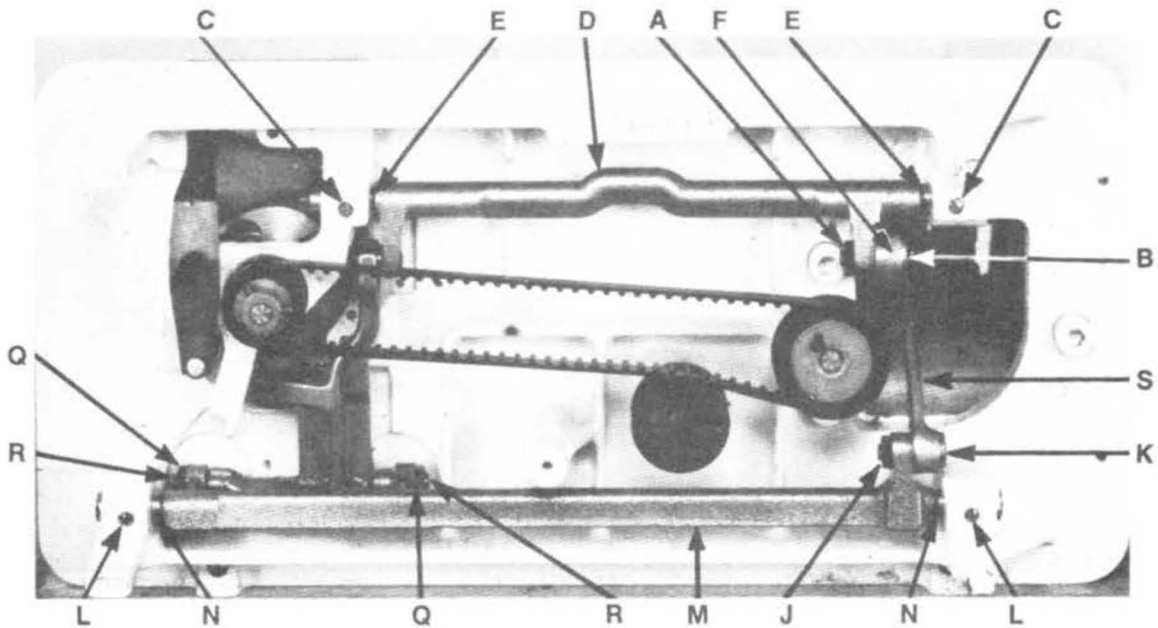
Belt tension should be such that a load of 140 gr. centrally located between the pulleys, deflects the belt 4.8 to 6.3 mm. (3/16 - 1/4).

Setting:

- 1) Loosen screw **B** and rotate belt idler **E** until correct tension is achieved.
- 2) Tighten screw **B**.

Note: After adjusting belt tension, check and adjust hook timing as described in **19**





Feed Mechanism - Feed Lift Shaft - Actuating Shaft

Removal:

- 1) Remove **1** and **2**.

Feed Lifting Shaft

Removal:

- 1) Remove nut **A** and eccentric screw **B**.
- 2) Loosen both screws **C** with a minimum of 2 turns.
- 3) Dislocate the two hinge centers **E** by pushing shaft **D** first to the right and then to the left, remove shaft **D**.

Caution on reassembly:

- a) Position the two hinge pins **E** so that two screws **C** are located over the flat of each pin which is indicated by a chamfer on the head of each pin **E**.
- b) Before tightening the two screws **C** insure that there is no lateral play of shaft **D** and that connecting rod **F** is not forced sideways.
- c) Assemble the eccentric screw **B** with the eccentric position towards the rear of the machine.

Feed Actuating Mechanism

Removal:

- 1) Remove both screws **G** and feed dog **H**.
- 2) Remove nut **J** and eccentric screw **K**.
- 3) Loosen both screws **L** with at least two turns.
- 4) Dislocate the two hinge pins **N** by pushing shaft **M** first to the right and then to the left and remove shaft **M** together with feed dog support **P**.
- 5) To disassemble the unit formed by shaft **M** and feed dog support **P**, loosen the two lock nuts **Q**, then remove the two screws **R** together with the lock nuts **Q**.

Caution on reassembly:

- a) Before tightening the two lock nuts **Q** adjust the two screws **R** so that feed dog support **P** moves freely but without play.
- b) Position the two hinge pins **N** so that the two screws **L** are located over the flat of each pin which is indicated by a chamfer on the head of each pin **N**.
- c) Before tightening the two screws **L** insure that there is no lateral play of shaft **M** and that feed fork **S** is not forced sideways.
- d) Assemble eccentric screw **K** with the eccentric position towards the front of the machine.

Adjustment of feed dog alignment:

Check:

- 1) Remove needle and presser foot.
- 2) Set stitch length dial on 4 mm. (6 s.p.i.).
- 3) Turn hand wheel until feed dog is in its highest position.
- 4) The feed dog should be in center of and parallel to the slots in the throat plate.
- 5) Continue turning hand wheel. The feed dog should not strike front or rear edge of throat plate slot.

Setting:

- 1) Remove throat plate.
- 2) Loosen slightly both screws **G**, position feed dog **H** as required and tighten both screws **G**.
- 3) Install throat plate and recheck.
- 4) If adjustability of feed dog **H** is insufficient, the following settings are to be made.

Sideways setting of feed dog:

- 1) Loosen the two lock nuts **Q**, turn screws **R**, by unscrewing one then screwing in the second the same number of turns, as required to center feed dog **H**.
- 2) Before retightening lock nuts **Q** make sure there is no sideways play of feed dog support **P**.

Front to rear setting of feed dog:

- 1) Loosen nut **J**, turn eccentric screw **K** clockwise or counter clockwise as required.
- 2) Tighten nut **J**.

Caution:

Do not turn eccentric screw **K** more than $\frac{1}{4}$ turn in each direction.

Adjustment of feed dog height:

Check:

- 1) Set stitch length dial to 4 mm. stitch length (6 s.p.i.).
- 2) Turn hand wheel until feed dog **H** is in its highest position.
- 3) The height of the feed dog **H** over the top surface of throat plate should be 1.00 to 1.10 mm. (.040-.043) (see sketch).

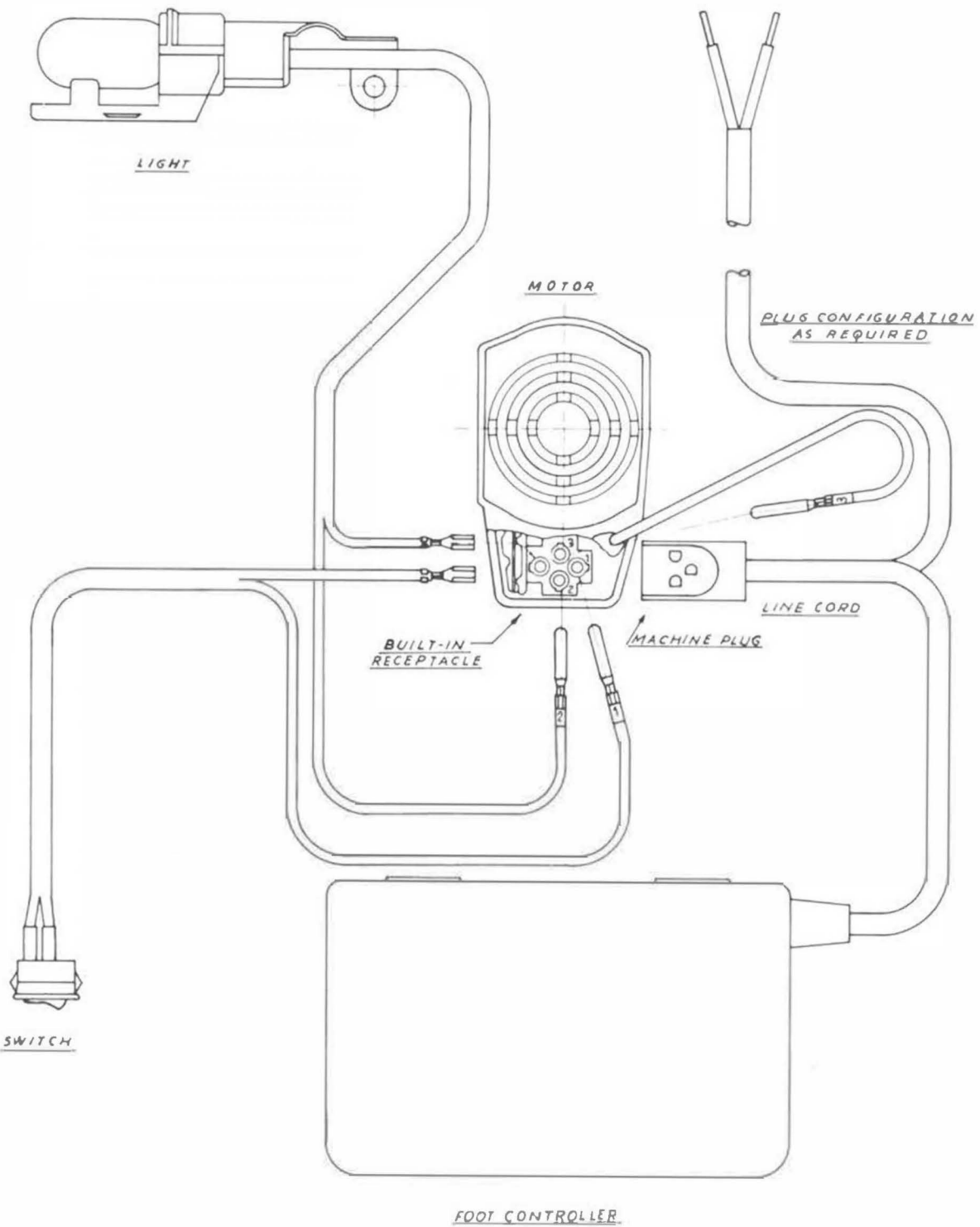
Setting:

Loosen lock nut **A**, turn eccentric screw **B** clockwise or counter clockwise as required.

Caution:

Do not turn eccentric screw **B** more than a $\frac{1}{4}$ turn in each direction.

Notes

wiring diagram

Service Manual

250 Series Machine Class

Addenda to Form 723, for 258 Machine

NOTE - The 258 machine differs from the 252 for the interchangeable discs system only.

The involved disassembling and reassembling procedures are herein described.

For all other sections, proceed as per 252 machine.

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Cam Stack and Shaft (258)

Removal:

- 1) Remove **1**
- 2) Set stitch width lever on "Straight Stitch".
- 3) Set needle position lever on "Right Needle".
- 4) Loosen screw **A**.
- 5) Remove cam stack assembly **B**.

Caution on Reassembly:

When reassembling cam stack unit **B**, make certain that the eccentric portion of shaft **C** faces to the right as shown in fig. **D**.

Gear mesh adjust:

- 1) Loosen set screw **A**.
- 2) Using a 10 mm. wrench, loosen the disc retaining spring screw **H** and remove the complete disc releasing group **N**.
- 3) Remove spring **M**.
- 4) Rotate eccentric shaft **C** clockwise until there is no play between worm gear and worm on shaft but without binding.
- 5) Tighten set screw **A** and check for free movement by turning hand wheel for a complete rotation on worm gear (18 rotation of handwheel).
- 6) Reassembly the group **N**, taking care that the three releasing springs be introduced into longer slots of the stud, and tighten screw **H**.

Note: After this adjustment check adjustment on sideways setting of needle bar as in **10** then and **11**

Pendulum timing adjust:

Check:

- 1) Place a piece of paper under needle.
- 2) Set needle position lever on "Center Needle" and stitch width lever on maximum stitch width.
- 3) The correct timing of the pendulum movement of the needle bar can be observed by manually operating the handwheel in the normal operating direction. The point of the needle should move upward until the needle is completely out of the paper before moving in the lateral direction and should reach its peak of ascent slightly past center of the two extreme positions of the needle. On the downward stroke all lateral motion should cease when the needle point is 3 to 6 mm. (.12 to .24) above the throat plate. See fig. **J 1**. The needle must return into the opposite needle hole precisely.

Setting:

- 1) Push disc releasing button **F** and remove the interchangeable disc **G**.
- 2) Loosen slightly the two screws **E**.
- 3) Turn handwheel until cam follower **L** is in a position corresponding to one of the high lobes on the cam and the needle bar is in its lowest position. Maintaining the needle bar in its lowest position, turn the cam stack by hand so that the center point of cam follower **L** is in line with the center of the cam as shown in fig. **K**.

12A

